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ABSTRACT

The lessons for this middle school teacher resource book were adapted from the original "A Sustainable Development Curriculum Framework for World History and Cultures," which grew out of the Earth Summit in Rio de Janeiro, Brazil, in 1992. The resource book contains three chapters. Chapter 1 is "Sustainable Development and World History and Cultures." Chapter 2, "Lessons," contains: (1) "Fair is Fair," which focuses on introducing the concept of sustainable development through the notion of intergenerational equity; (2) "Sustainable Development: The Ecosystem Approach"; (3) "Development Comes of Age," which provides two historical overviews of attitudes toward the environment; (4) "Our Common Future," which features a cooperative learning group approach to analyzing and solving problems; (5) "What's in a Name?" which deals with nuances associated with "development" language; (6) "Values and Sustainable Development; (7) "How is Sustainable Development Like a Seed?"; (8) "Cultural Assumptions and Sustainable Development"; (9) "Africa and the Industrial Revolution"; (10) "The Quality of Life and Sustainable Development," which introduces students to data analysis and social and economic indicators of the quality of life; and (11) "Decisions for a 'Developing' Nation," which engages students in a role play featuring allocation of limited financial resources within a "developing" nation. Chapter 3, "An Analytical Framework for Sustainable Development," includes: (1) "Introduction"; (2) "Framework Sample Questions"; (3) "Framework Definitions and Examples"; and (4) "Framework Sources." Includes 21 handouts. (EH)

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Making Global Connections in the Middle School:

Lessons on the Environment, Development & Equity

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Lessons on the Environment, Development & Equity

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Editor

Global Learning, Inc.
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Foreword

For two weeks in June of 1992, the Earth Summit focused the eyes and ears of the world on Rio de Janeiro, Brazil, and on the interconnected issues of environmental dependency, economic development, and the planet's recalcitrant poverty. This United Nations Conference on Environment and Development concluded by setting ambitious goals for changing the way we humans conduct our multifaceted affairs. Follow-up mechanisms were created to start to translate a host of visionary ideas into tangible realities–to make sustainable development more than a slogan or rallying cry.

The Earth Summit was a temperature check on the original prescriptions for sustainable development that grabbed global attention as the report of the UN's World Commission on Environment and Development. Published in 1987 as *Our Common Future*, the report sought to transcend the traditional wisdom that pitted environmental concerns against economic interests as if they were mutually incompatible. *Our Common Future* became a rallying point for national governments and the whole United Nations system, for business interests as well as environmental groups, for nongovernmental organizations involved in economic development projects as well as local community organizers.

The report also served as the basis of an educational project undertaken by Global Learning in 1988, funded primarily by the U.S. Agency for International Development and the Geraldine R. Dodge Foundation. Our goal was to prepare teacher resources that would help secondary social studies teachers incorporate the global concept of sustainable development in world history, world cultures and world geography courses. The resulting teacher resource book, *A Sustainable Development Curriculum Framework for World History and Cultures*, is currently being disseminated to teachers around the world.

The lessons for this current middle school teacher resource book have been adapted from this original *Sustainable Development Curriculum Framework* by William Luderer, an experienced teacher from the Thomas Jefferson Middle School in Teaneck, New Jersey. The project was supported by the Longview Foundation for Education in World Affairs and International Understanding. We at Global Learning gratefully acknowledge their encouragement and support.

The original project team created Chapter 3's Analytical Framework for Sustainable Development collaboratively. We would like to acknowledge the original authors of the lessons in this book:

Jeffrey Brown–*What's in a Name?* and *Cultural Assumptions and Sustainable Development*

Fred Cotterell–*Decisions for a "Developing" Nation*

Thomas Crop–*Values and Sustainable Development* and *The Quality of Life and Sustainable Development*

William Luderer–*Fair Is Fair* and *How is Sustainable Development Like a Seed?*

Sara Talis–*Africa and the Industrial Revolution*

Marie Varley–*Sustainable Development: the Ecosystem Approach, Development Comes of Age,* and *Our Common Future.*

We are grateful to the Common Heritage Programme of Ottawa, Canada for permission once again to reprint handouts 2 and 4. A special thank you to Bucky Schnarr for desktop publishing this entire volume as a major in kind contribution to Global Learning and to the students who wrestle with the critical issue of sustainability through these lessons.

Global Learning, Inc. is a nonprofit educational organization that translates the world's growing interdependence into educational activities for teachers, students and educational systems from elementary school through college. Current program emphases include developing resources for US History teachers on environmentally sustainable development, establishing peer mediation programs in elementary and secondary schools, and multicultural education.

Jeffrey L. Brown
Executive Director

Paula S. Gotsch
Associate Director

Chapter 1

Sustainable Development and World History & Cultures

Breakthroughs in thinking are rare, but they do occur. After almost three decades of watching the gap between the world's rich and poor countries yawn ever wider and seemingly isolated environmental problems emerge as an ecological crisis on a global scale, world leaders have put some pieces together in a new and promising fashion.

Instead of the environment's being treated as an afterthought in the development process—something either expendable or requiring ex post facto clean-up, the environment has been recognized as the foundation from which development grows and upon which development always depends. At the same time, the eradication of poverty in the world was reaffirmed as the primary goal of economic development.

Sustainable Development

These changes in thinking are summarized in the concept of "sustainable development," which is defined most concisely as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." (OCF, p.43) This breakthrough in thinking has emerged in published form as *Our Common Future* (OCF), the 1987 report of the World Commission on the Environment and Development (WCED) to the General Assembly of the United Nations. The historical earth summit held in Rio de Janeiro in June 1992 was a major step toward revising and implementing the goals of *Our Common Future*.

This breakthrough in thinking, literally on the global level, helped clear some initial obstacles to conceptualizing the original project that created these lessons. Our initial goal was to create a framework in which high school teachers could teach about "Third World development" as an integral part of their world history or world cultures course. A review of the latest development educational materials, however, revealed a serious pitfall embedded in one's choice

of language with which to begin the task. In a word, ethnocentrism. Ethnocentrism can be defined as judging others by one's own values and standards without regard for the others' values and standards.*

As soon as we begin to use the traditional language of development, we begin to reinforce views of the world based on "us versus them." For example, if the United States is "developed," and Nigeria is "developing," it appears logical that the Nigerians are trying to become like us. Worse yet, if Bangladesh can be said to be "under-developed," they are less than we. They stand "under" us, and it is highly unlikely that we will ever be able to understand them from a perspective other than that of an implied superior.

Avoiding Stereotypes

One of the reasons states such as New Jersey have begun to require courses in world history and world cultures involves not only students' lack of factual knowledge about the rest of the world, but also their judgmental attitudes that reinforce past stereotypes and outright bias. Thus, we did not want to fall into the trap of reinforcing stereotypic ideas of students—and teachers—by the very language we used to discuss this global issue.

Development more than Economics

Traditional development language is also guilty of oversimplifying the very complex, holistic process of development by implying that it refers primarily, if not exclusively, to economic activities. Again, such an assumption negates the achievements of centuries of cultural, social and political developments by peoples the world over and can reinforce the American student's unintended bias.

A Solution

The language of "sustainable development" helps us escape from these traps. First of all, it recognizes the fact that the development process involves all institutions of a society, not just the economy. Secondly, this language redefines the totally dependent relationship of such multifaceted development on its ecological base. Thirdly, sustainable development reaffirms equity—especially overcoming the widening rich-poor gap in the world—as the primary goal of development. Thus, this new language gives all societies a new norm by which to evaluate their means of providing for both present and future needs—the norm of sustainability rather than the norm of one country's or another's

---

* Seeking a cure for ethnocentrism need not lead to cultural relativism, in which one tries not to make any value judgments at all vis a vis another culture. Teachers have been increasingly criticized for winding up in this position when faced with fundamental justice issues like apartheid or infanticide. One solution to the problem of cultural relativism is a process of both analytical and reflective thinking. One must be able to suspend judgment for a period of time in order to feel and understand the other's position. This suspension of judgment does not mean one has to agree with the position, just seek to view it from the other's perspective. Having done so, one then makes a reflective judgment and may decide to act against the other's position and values. However, one has given the other person or group the respect of being taken seriously. One assumption operating in this approach is that no one person or group has a corner on the "Truth," and thus, as Gandhi taught, we must remain open to the truth even in our opponent's stance. In such reflective action, one proceeds humbly, remaining open to further dialogue on the underlying values from which conflicts may emerge.

economic system. All nations in the world are in the process of "developing."

It is for these reasons that these lessons focus, not just on "Third World development," but rather on the more inclusive concept of "sustainable development."

The Environment Development Equity Connections

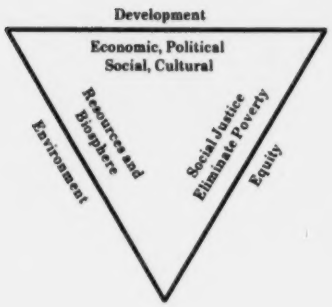
Sustainable development contains within it three major elements—the environment, development and equity. What may enable the world's people to meet their broad-based needs in a sustainable way over the coming generations is increased understanding of how these elements are not isolated from one another, but are interconnected. As the World Commission on Environment and Development has noted:

> Through our deliberations and the testimony of people at the public hearings we held on five continents, all the commissioners came to focus on one central theme: many present development trends leave increasing numbers of people poor and vulnerable, while at the same time degrading the environment. How can such development serve next century's world of twice as many people relying on the same environment? This realization broadened our view of development. We came to see it not in its restricted context of economic growth in developing countries. **We came to see that a new development path was required, one that sustained human progress not just in a few places for a few years, but for the entire planet into the distant future. Thus "sustainable development" becomes a goal not just for the "developing" nations, but for industrial ones as well.**
> (OCF, p.4—emphasis added)

Thus, we human beings are beginning to recognize the connections among what used to be thought of as separate crises. "These are not separate crises: an environmental crisis, a development crisis, an energy crisis. They are all one." (OCF, p.4) Through the vehicle of the United Nations system, and particularly through the work of the World Commission on Environment and Development, the world community has recently set a new goal toward which to work and by which to judge human practices and policies.

The Relationship

Three lessons emerge from the interrelationships of the environment, development and equity.



1. **Environment First**
   First, the traditional relationship between the **environment** and the economy in industrialized societies is being transposed. Instead of pursuing economic activities of production and distribution as primary and looking at the consumption of natural resources and the impacts on the environment as incidental, we humans are beginning to realize we must put the environment first. This means committing ourselves to conserving resources even as we use them. It also means including the environmental "costs" of an economic activity as integral to the overall costs of that activity, not treating them as a "by-product" or an

afterthought to be cleaned up. "Thus economics and ecology must be completely integrated in decision-making and lawmaking processes not just to protect the environment, but also to protect and promote development."(OCF, p.37) If we do not do these things, we will deplete nonrenewable resources like petroleum or the biological diversity of the rainforests so that future generations will be deprived of their benefits. We could also alter the biosphere so as to threaten the continuation of human—and other—life itself.

2. **Holistic Development**
   A second lesson has emerged as well. The processes by which people meet their needs can be called **development**. Thus examination of a country's "development" includes not just economic processes and institutions, but also cultural, social and political processes. These processes and their institutions are all interrelated and are all nested in global systems.
3. **Overcoming Poverty**
   Third, the concept of **equity** refers in general to achieving social justice. Within the context of sustainable development, equity refers to the goal of eliminating poverty in the world, and, particularly, eliminating the gap between rich and poor countries that has been growing wider for decades, if not for centuries. "A world in which poverty and inequity are endemic will always be prone to ecological and other crises." (OCF, p.44) Thus sustainable development affirms that the primary goal of the broad processes of development should be the elimination of poverty.

   There are at least three reasons why the rich should not be getting richer while the poor get poorer. First, reducing the amount of human suffering in the world requires the end of abject poverty. Second, poverty creates conflict and instability, which can lead to social unrest, repression and violence. Social and political systems cannot be sustained in the long run if they rest on such unstable foundations. "...relationships that are unequal and based on dominance of one kind or another are not a sound and durable basis for interdependence." (OCF, p.67) Third, poverty also adds tremendous stress to the already beleaguered environment as poor people use resources and pollute their surroundings despite the long term consequences because their immediate needs are so severe.
   There is no consensus in the world community on how to achieve this goal of eliminating poverty in the world. However, within the framework of sustainable development, present and proposed actions should be evaluated, in part, on how they will contribute to, or detract from, this goal of equity, as well as for their total impact on the environment.

Changes Envisioned

The concluding section of the second chapter of *Our Common Future* contains a summary of the global changes perceived as necessary if we are to move toward sustainability. Teachers can use this statement as a guidepost by which students can investigate current issues and their historical antecedents, as well as evaluate proposed solutions to global problems.

> In its broadest sense, the strategy for sustainable development aims to promote harmony among human beings and between humanity and nature. In the specific context of the development and environment crises of the 1980s, which current national and international political and economic institutions have not and perhaps cannot overcome, the pursuit of sustainable development requires:
>
> - a **political system** that secures effective citizen participation in decision making,
> - an **economic system** that is able to generate surpluses and technical knowledge on a self-reliant and sustained basis,
> - a **social system** that provides for solutions for the tensions arising from disharmonious development,
> - a **production system** that respects the obligation to preserve the ecological base for development,
> - a **technological system** that can search continuously for new solutions,
> - an **international system** that fosters sustainable patterns of trade and finance, and
> - an **administrative system** that is flexible and has the capacity for self-correction.
>
> These requirements are more in the nature of goals that should underlie national and international action on development. What matters is the sincerity with which these goals are pursued and the effectiveness with which departures from them are corrected. (OCF, p. 65)

Chapter 2

Lessons

Introduction

The following eleven lessons will help teachers introduce the concept of sustainable development to middle school students. The lessons will appeal to a variety of learning styles as they call for the abilities to analyze data, clarify assumptions, compare and contrast, draw conclusions, and propose possible solutions to problems, using often complex and even conflicting information. Such abilities lie at the heart of effective citizenship in a global village.

Techniques appropriate to middle school instruction are featured throughout: cooperative learning groups, visual organizers to keep students actively engaged, task modeling, small and whole group discussion, role playing, project work, student choice, etc.

The opportunity for a portfolio style assessment of students' learning is presented through a multitude of evaluative suggestions. Lessons feature such assessment techniques as role playing, artwork, poetry, creative and essay writing, group and individual problem solving, oral presentations, scenario-writing, debates. etc. In addition, lesson four, *Our Common Future*, and lesson eleven, *Decisions for a Developing Nation*, provide the teacher with summary style lessons which can serve as interim and final assessments of student understanding.

Overview Lessons on Sustainable Development

1. *Fair is Fair* (page 8) focuses on introducing the concept of sustainable development through the notion of intergenerational equity.

2. *Sustainable Development: the Ecosystem Approach* (page 15) explores the underlying assumptions and philosophy of solutions to problems identified by students in the previous lesson and provides a useful framework for such evaluation.

3. *Development Comes of Age* (page 20) provides two historical overviews of attitudes toward the environment, leading up to current understandings of sustainable development.

4. *Our Common Future* (page 24) features a cooperative learning group approach to analyzing and solving the problems presented in the video *Our Common Future*, a graphic overview of sustainable development and the work of the World Commission on Environment and Development.

5. *What's In A Name?* (page 26) deals with nuances associated with "development" language.

6. *Values and Sustainable Development* (page 29) explores relationships between cultural values and economic development.

7. *How Is Sustainable Development Like a Seed?* (page 34) employs the creative technique of metaphorical problem solving to build associative bridges toward a deeper understanding of the concept of sustainable development.

8. *Cultural Assumptions and Sustainable Development* (page 36) reflects on one formulation of North American assumptions concerning the relationship of human beings and the environment.

9. *Africa and the Industrial Revolution* (page 39) examines the relationship of slavery and the Industrial Revolution - the issue of equity in economic development.

10. *The Quality of Life and Sustainable Development* (page 48) introduces students to data analysis and social and economic indicators of the quality of life.

11. *Decisions for a "Developing" Nation* (page 54) engages students in a role play featuring allocation of limited financial resources within a "developing" nation.

Lesson 1 Fair is Fair

Purpose The purpose of this activity is to introduce the concept of sustainable development and to set a context for studying about it in this unit.

Objectives As a result of this activity, students will be able to:

1. Analyze the interrelatedness of development problems and solutions.
2. Understand the impact of one generation's activities on subsequent generations and the need for intergenerational equity in development decisions.
3. Define sustainable development as a way to meet the needs of the present without compromising the ability of future generations to meet their own needs.

Time Required Two class periods.

Materials Needed Foils 1 and 2
Handout 1 for each student.

Procedures Fair is Fair (background at end of lesson)

1. Discuss with the class the role of an ombudsperson. Provide examples of ombudspersons at work within the school or community: for example, guidance counselors interceding on a student's behalf, family service agencies protecting the rights of children, lawyers representing clients, etc.
2. Instruct students to imagine themselves as ombudspersons for future generations. Have each student identify and write down a current practice from the political, economic, social or cultural area which will have an unfairly adverse impact on future generations. (It may help middle school age children to personalize this activity by imagining the objects of this watchful eye as their own great grandchildren.)
3. Grant students the authority to impose "solutions" to their problems and have them write the solutions below their problems.
4. Conduct a discussion based on the students' problems and solutions. Focus on each problem's actual potential for harm, appropriateness of the proposed solution, equitable nature of the solution for both present and future generations, and alternate solutions to problems.
5. Encourage students to express new concerns raised by proposed solutions in order to bring out how solutions to one problem can lead to new problems. Be careful not to discourage students so they feel it does not make any difference if one acts on such problems. Rather, work toward a respect for the complexity of the ecosystem and an attitude of humility in approaching these problems, as well as a commitment to act responsibly in light of that respect and

humility. Two examples of how one set of solutions became new problems requiring ongoing problem solving:

a. The story of the seemingly endless series of cause-and- effect events and demands caused by the simple act of offering a cookie to a mouse in the children's book, *If You Give a Mouse a Cookie* (Laura Joffe Numeroff, HarperFestival).

b. In the 1970s environmentalists were issuing a strong call to reduce paper and wood consumption in order to save trees. In response, the McDonald's restaurant chain switched from using paper products to styrofoam. As environmentalists realized that styrofoam consumes the nonrenewable raw material of petroleum and also does not biodegrade in landfills, they began to call for the elimination of styrofoam. In response, in the 1990s McDonald's returned to packaging their food items in paper products, but this time used primarily recycled paper.

6. Focus discussion on the interrelatedness of problems and the impact of one generation's activities on subsequent generations.
7. Introduce the concept of sustainable development as an approach that attempts to take such problems into consideration before they affect future generations thus striving for equity for future generations.

   a. "Development" can be defined as a society's process of improving the quality of human lives in many areas, including: income and consumption levels; social, political, and economic institutions; and freedom of choice over decisions that affect people's lives.

   b. What would be some examples of "development activities?" (e.g., providing low interest loans to farmers so they can buy seeds and equipment; building homes; organizing nongovernmental associations to solve local problems; digging wells for drinking water etc.)

   c. What do you think of when we add the term "sustainable" to the word "development?" How would people act differently? What would "sustainable development" look like if you saw it in operation?"

   d. What would be some examples of "unsustainable development?"

8. Place Foil 1 on the overhead projector. At the same time distribute to each student Handout 1. Instruct students to fill in the blank Handout with the information on the Foils as it is revealed.

   The World Commission on the Environment and Development presented a report to the United Nations in 1986, entitled, *Our Common Future*. Their definition of sustainable development and recommendations for world action on the concept are being accepted by leaders and ordinary people all over the world. They have defined sustainable development as "...development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

a. How does this definition compare with what the class has brainstormed above?

b. What changes have been made in the last few years that are more likely to let us meet our needs while also ensuring the ability of future generations to meet their needs?
e.g., the growth of both voluntary and required recycling programs; the decision of such multinational corporations as 3M to reduce their impact on the environment to practically nothing by recycling former wastes into new uses and by switching from environmentally harmful chemicals to such things as water-based solvents; the logging practice of single tree, selective cut as an alternative to clear cutting practices by some logging companies, e.g. the Big Creek Lumber Company of Davenport, CA; etc.

9. Place Foil 2 on the overhead projector. Our Common Future also notes that sustainable development includes the following:

   a. The environment is both the "source" and the "sink." It needs to be taken into account ahead of time, not as an after thought. I.e., we must begin to include within the "costs" of doing something the use of *resources*, as well as the impact on the *biosphere*. Pollution is not a by-product anymore, but one of the anticipated outcomes to be taken care of. ["Previously our main concerns centered on the effects of development on the environment. Today, we need to be equally concerned about the ways in which environmental degradation can dampen or reverse economic development." (OCF, p. 35)]

   b. Not just economic development, but also social, cultural and political development.

   c. Including equity means that the goal of development is still the elimination of poverty, hunger and human suffering. ["Poverty is not only an evil in itself, but sustainable development requires meeting the basic needs of all and extending to all the opportunity to fulfil their aspirations for a better life. A world in which poverty is endemic will always be prone to ecological and other catastrophes". (OCF, p. 8)]

   d. Closing: One living Native American has given a summary of sustainable development as being "a system of development that is ecologically sound, economically profitable, socially equitable, and politically supportable." (James Enote, "Saving the Land and Preserving the Culture: Environmentalism at the Pueblo of Zuni," *Global Pages*, Immaculate Heart College Center, Los Angeles, CA, August 1992.)

Teacher Background

Intergenerational Responsibility

The concept of sustainability brings children to the forefront of environment/development considerations. The children alive today are the first representatives of all future generations. If this adult generation cannot meet the needs of today's children then there is little chance of our acting to meet the needs of generations yet unborn.

The aim of sustainable development also raises the issue of a new type of fairness and equality rarely considered previously: intergenerational

equity. This must now take its place among concerns for equality between races, sexes and nations. Achieving that equality is proving difficult enough; equity between generations is a more difficult goal. Unborn generations are not present to speak for themselves, so sustainable development requires that this generation accept responsibility for future generations. Making this goal a reality may be the foremost challenge facing policy makers in the closing years of the 20th century, and beyond.

In the past, it was assumed that succeeding generations would inherit a planet very similar to the one inhabited by the current generation, with perhaps new technology to make life safer, healthier and easier.

This is no longer a justifiable assumption. The present generation is the first to have the power to radically alter planetary ecosystems, to present its offspring with a planet very different from the one it inherited—changed atmosphere, soils, water regimes, vegetation.

The United Nations proposes three basic principles of intergenerational equity:

- Each generation is required to conserve the natural and cultural resource base, so that it does not unduly restrict the options of future generations.
- Each generation is required to maintain the quality of the planet so that it is passed on in no worse condition than it was received.
- Each generation should provide its members with equitable access to the legacy from past generations.

Thus justice between generations involves not only duties, but also rights, not only between generations, but also between members of the same generation. The establishment of such rights is a daunting political task. The 1987 report of the World Commission on Environment and Development suggests a beginning might be "the designation of an ombudsman to represent the interests and the rights of present and future generations, and act as an environmental watchdog."...

The achievement of environmentally sound and sustainable development will require actions by citizens as well as UN agencies and governments. Justice for children and for all future generations can only be gained through a global alliance.

If the many threats to the environment and the future are to be met effectively they must be met by the present adult generation; many of the key decisions and actions must be made in the 1990s.

The technology is largely in place, and as more societies become more open, many more people take part in decision making. This offers an historic opportunity, since environmentally sound and sustainble development cannot be achieved without broad public participation and freedom of information.

The state of our children and the state of our environment—and what we do now for the future of both—will more than anything reveal the state of our civilization and the prospects of our future as a species.*

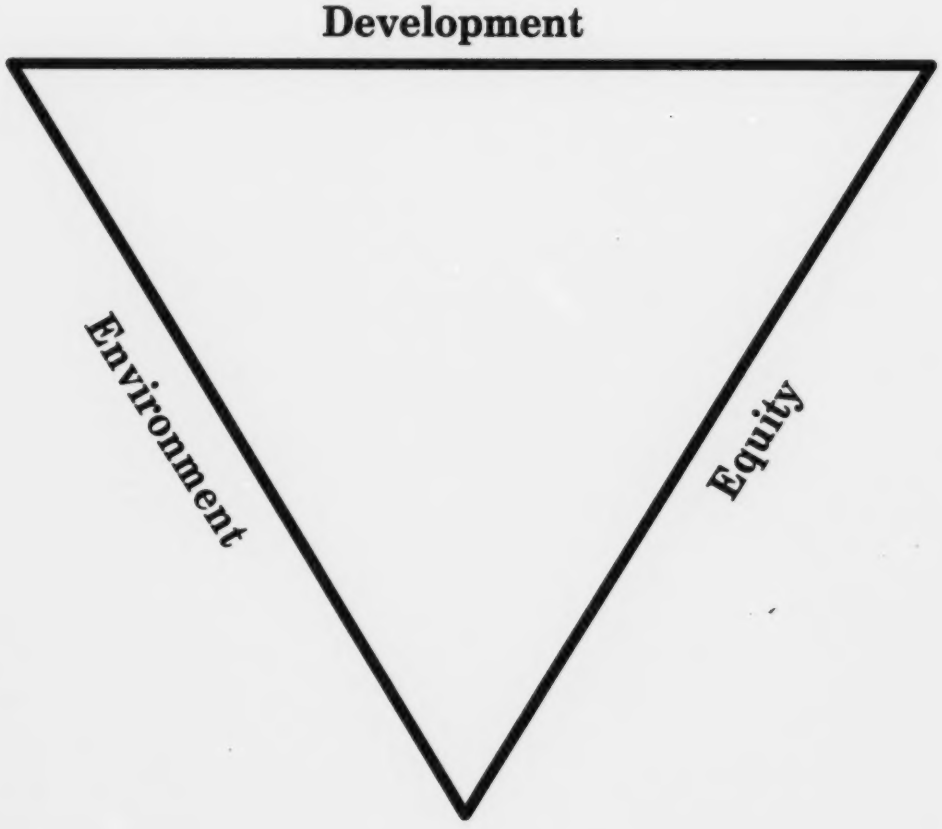
* Excerpted from: UNICEF/UNEP, Summary, *The State of the Environment 1990: Children and the Environment.*

Sustainable Development

... meets the needs of the present

without compromising the ability of

future generations to meet their own needs.

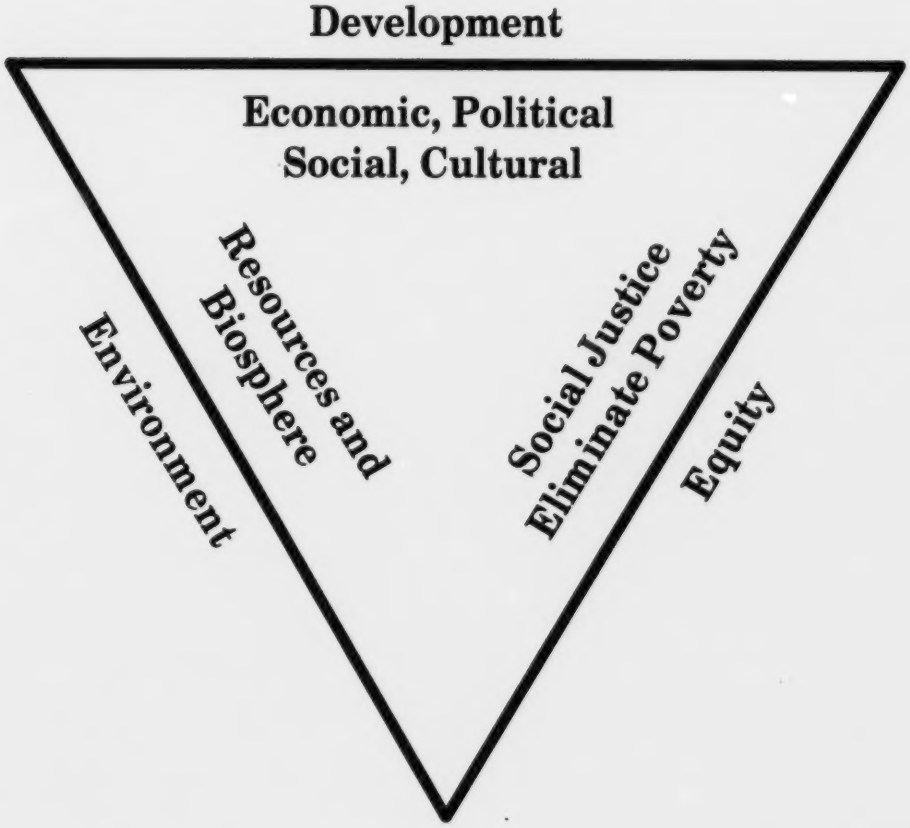


Sustainable Development

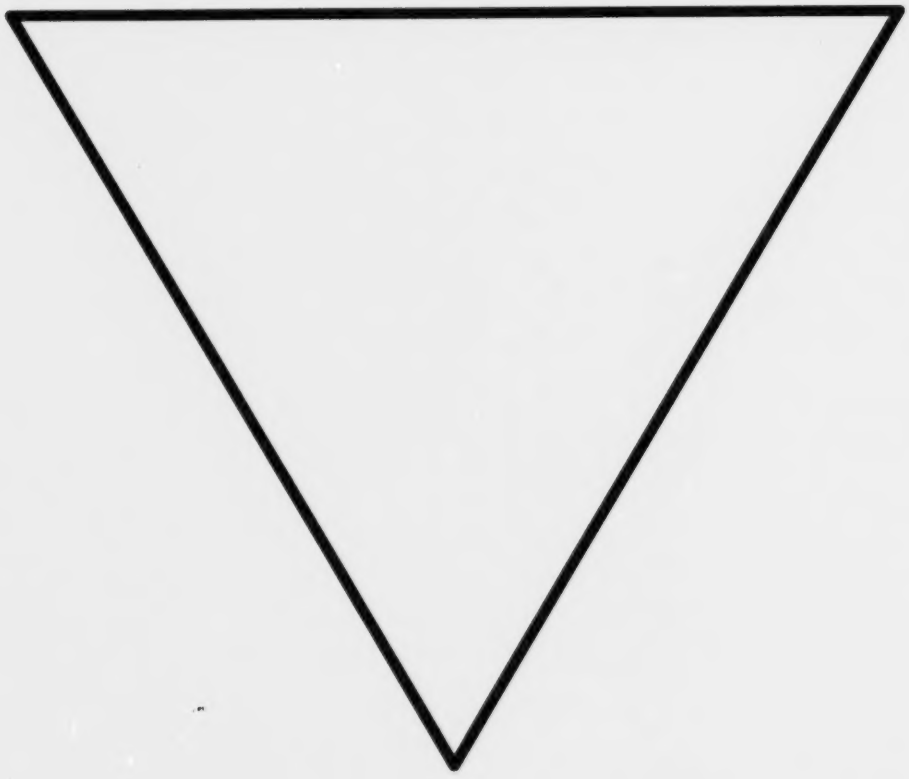
... meets the needs of the present

without compromising the ability of

future generations to meet their own needs.



Sustainable Development



Lesson 2 Sustainable Development: the Ecosystem Approach

Purpose The purpose of this activity is to analyze and evaluate development issues using an ecosystem approach. This requires students to examine critically the underlying assumptions and philosophies of their proposed solutions from the previous lesson, *Fair is Fair*, and, when necessary, to move their problem-solving thinking to a more sophisticated level.

Objectives As a result of this activity, students will be able to:

1. Understand the evolution in management styles in caring for the environment (egocentric, piecemeal, environmental, ecosystem approaches).
2. Identify examples of these management styles from case scenarios.
3. Evaluate proposed solutions to problems, including their own from lesson one, in terms of these management styles.
4. Extend their own proposed solutions to environmental problems that fall short of the ecosystem approach so that their solutions reflect an ecosystem approach.

Time Required One class period.

Materials Needed Handout 2
Sustainable Development: The Ecosystem Approach
Handout 3
The Ecosystem Approach Organizer

Procedures The Ecosystem Approach

1. Distribute Handout 2
Sustainable Development: The Ecosystem Approach.
2. Read and discuss the introductory material on page one of the handout as a class.
3. Distribute Handout 3
The Ecosystem Approach Organizer.
Examine the already entered solutions as to the appropriateness of the boxes in which they are entered.
4. Select several additional problems from Handout 2. Solutions outlined on the Handout should be discussed with the class and consensus reached on the appropriate box for each solution (egocentric, piecemeal, environmental, ecosystem). Each student should fill in the appropriate space on her/his *Ecosystem Approach Organizer.*
5. Problems and solutions identified by the class in lesson one, *Fair is Fair*, should now be examined and plotted on the organizer. In those cases where the proposed solution fell short of the ecosystem

approach, class discussion should attempt to lead to such a solution. Students should complete their individual organizers as discussion unfolds.

Evaluation Distribute new copies of Handout 3 and instruct students to categorize correctly several problems on Handout 2 which have not been discussed by the class.

Sustainable Development: The Ecosystem Approach

Ecosystems are natural or artificial subdivisions of the biosphere with boundaries arbitrarily defined to suit particular purposes. It is possible to speak of your personal ecosystem (you and the environment on which you depend for sunshine, air, water, food, and friends), the Great Lakes basin as an ecosystem (interacting communities of living and nonliving things in the basin), or our planetary ecosystem, the biosphere....

There is a simple, yet profound difference between "environment" and "ecosystem." The notion of environment is like that of **house**—something external and detached. In contrast, ecosystem implies **home**—something we feel part of and see ourselves in even when we are not there. A home has an added spiritual dimension that makes it qualitatively different from a house. It is a happier place because of the caring and sharing relationships among its inhabitants.

The emergence of an **ecosystem approach** to planning, research, and management in the Great Lakes basin is not accidental. It is the most recent phase in a historical succession of management approaches from **egocentric** to **piecemeal** to **environmental** and now to an **ecosystem approach**. This succession arose from stresses imposed by the burgeoning growth of population and technology in the Great Lakes basin. The ecosystem approach emerged in the 1970s with the realization, in part from the discovery of toxic chemicals in human food chains, that people and environments can only be managed effectively in relation to ecosystems of which they are parts....

Some examples of the evolution from indifferent to ecosystem management styles may help to clarify what is meant by ecosystem approach and to show the extent to which it is now in development:

Organic waste First it was dumped wherever convenient—best of all in streams or lakes. Next, because of downstream problems, we developed energy-consumptive sewage treatment systems. Now, an ecosystem approach focuses on recycling energy efficiently, and material recovery from sewage.

Eutrophication First, it was ignored. When the odors became too strong, nutrient-rich effluents were diverted downstream. Then phosphorus was removed from sewage effluents. An ecosystem approach promotes low-phosphate detergents, more efficient use of fertilizers, and nutrient recycling.

Oxides related to acid rain

At first the pervasiveness of the acid rain problem was not recognized. When problems arose locally, the "solution" was to build taller smokes stacks. Then came removal of acids by scrubbing. Now, an ecosystem approach advocates energy conservation and the recycling of sulfur.

Water diversions and consumptive uses

The first rule was to divert, the more the better. Then the scale of operations was increased to meet new shortages, encouraging export as a commodity. An ecosystem approach might recommend diverting water sparingly—and only in the context of overall regional planning. It might also set limits on overall use or provide incentives for nonconsumptive uses.

Cancer

People were never indifferent to cancer; however, it is still commonly viewed in terms of single causes. In an ecosystem approach, real cures (prevention techniques) must be based on the knowledge that cancer is to a large degree environmental, with many contributing causes.

Toxic chemicals

At first, toxic chemicals were used indiscriminately. Then they were dealt with one by one with regulations after the fact, as in the case of pesticides. An ecosystem approach requires designing with nature, particularly for long-lived compounds.

Energy shortages

Successive "solutions" were, first, to ignore the problem, then to increase the energy supply and expand the grid with pricing to encourage greater use. An ecosystem approach encourages conservational pricing with inverse rate schedules to discourage greater use.

Traffic congestion

Successive "solutions" have been to curse, build more roads and superhighways, improve public transportation, and stagger commuters' work hours. An ecosystem approach might encourage a broader look at commuters' work and travel needs and at overall land use planning. Solutions then might include greater use of telephones and computer terminals or the development of new combinations of work, shopping, and residential population clusters.

Pests

At first it was "run for your life." Then came broad-spectrum pesticides. Next were selective, degradable poisons. An ecosystem approach calls for integrated pest management.*

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* *The Ecosystem Approach to Managing Human Uses and Abuses of Natural Resources in the Great Lakes Basin*, by J.R. Vallentyne, A.M. Beeton, Great Lakes Laboratory for Fisheries and Aquatic Sciences, DEPARTMENT OF FISHERIES AND OCEANS, 1986.

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Ecosystem Approach Organizer

Approach / Problem	Egocentric	Piecemeal	Environmental	Ecosystem
organic waste	dumped wherever convenient	energy consumptive sewage systems		recycling energy, material recovery from sewage

Lesson 3 Development Comes of Age

Purpose Students will examine various societies' environmental consciousness within an historical, evolutionary framework and analyze that consciousness in terms of the tenets of sustainable development.

Objectives Students will be able to:

1. Describe environmental consciousness in traditional, early industrial and mature industrial societies.
2. Compare and contrast the traditional, early industrial, and mature industrial societies' care of the environment.
3. Project the characteristics of a "postindustrial" society.
4. Examine the degree to which these societies meet the requirements of sustainable development.

Time Required One class period.

Materials Needed Handout 4
Sustainable Development: A New Perspective on the Environment

Procedure Development Comes of Age

1. Explain to students that they will be engaging in a reading activity that will require them to read and summarize passages individually and to act as clarifier/recorder when others are reading.
2. Divide the class into cooperative learning groups of three students per group. Distribute Handout 4 to each student.
3. Call the students' attention to the three part nature of the handout. Have each group decide within itself which member will read which section. Within each group each member reads and orally summarizes one of the three passages while the other two members of the group help the *summarizer* clarify the summary by asking probing questions or providing input. *Clarifiers* keep the passage in front of them, *summarizers* work from memory. One of the clarifiers should also serve as *recorder* for what the *summarizer* is producing.
4. At the conclusion of the reading, bring the class together for a discussion of the concepts contained in the Handout. Through discussion clarify such terms as *preindustrial society, traditional societies, mature industrial societies, exploitation of resources*, etc. Encourage the students to use the context of the Handout to arrive at definitions for these terms.

5. Ask the following questions of the class (encourage students to refer back to their notes or the Handout itself to substantiate their answers):
   a. Did traditional societies see themselves as "shapers" or "makers" of the environment? Explain.
   b. What makes early industrial societies different from traditional societies?
   c. What demonstrates that early industrial societies saw the environment as a vast storehouse?
   d. Summarize the essence of the change in attitude from pre- to postindustrial consciousness.
   e. What realization marks the mature industrial societies from the previous era?
   f. In this society, "the desire to manage" the environment is important. How can "management" be successful in "preserving and protecting" the environment?
   g. Is the worldview described in the traditional society applicable today? How?
   h. A fourth stage has been called the "postindustrial society." Sum up what you imagine the qualities of this stage to be.
   i. How would each of these stages be either compatible with or adverse to the concept of sustainable development?

Evaluation Following the above discussion, have the original groups reform and answer three of the above questions in writing. Each member of the group would be responsible for answering one of the questions. Allow a five minute discussion period prior to writing for small group members to help one another formulate their answers.

Sustainable Development: A New Perspective on the Environment

Environment Consciousness in Traditional Societies—We are One with It

Our journey begins with our forbearers in preindustrial societies. In such societies, men and women do not experience "the environment" as something separate and apart. For them, rather, life is integrated. They are at one with the cosmos and hence the environment. The divisive sense that distinguishes human beings from the environment, which is the mark of an industrial culture, has not yet arisen.

In traditional societies, human beings live their lives within a sacred and unchanging created order, given to them by the Creator Spirit. The world is simply the way things are, have been and always will be. It is unthinkable that it could be substantially different, and a fundamental and lasting change is inconceivable. To the Plains Indians, treaties were to be kept "as long as the grass grows and the rivers flow," which is to say...forever. It was unthinkable that the soil would not support grass or that the rivers would ever cease to flow....

Early Industrial Consciousness—Keep it Clean

An industrial consciousness of the world segments and divides that which preindustrial consciousness sees as whole. It regards the environment as something apart, and nature as external to human beings. Nature thus becomes an object to be used, exploited and manipulated—there for humans to do with as they will.

In early industrial societies there is only a limited sense that the environment needs to be cared for; that if one is not careful, the landscape can be covered in garbage. So garbage piles up...everywhere. Early industrial societies learn to care for the environment as they gain experience with the creation and disposal of garbage. They learn that the environment should be kept clean. But early industrial consciousness does not create departments of the environment. Rather, it leads to sanitation departments and bylaws against littering.

It is not yet conceivable in an early industrial society that the riches of the environment need to be managed, much less protected and conserved. Ore is to be found and mined, trees are to be cut and lumbered. Tomorrow will take care of itself because the supply is virtually inexhaustible.

Until very recently this early industrial consciousness was the norm in Canada. ...But history moves on.

Mature Industrial Consciousness—Manage and Protect It

In the second stage of industrial development, the third stage overall, it dawns on us that continuous exploitation of the environment is not possible. Fishing stocks can be fished out; soil can be depleted; forests, if not replenished, disappear. The mature industrial stage, then, inherits from early industrial society the sense that the environment is external and can be manipulated. Now, however, the desire to manage and protect the environment comes to predominate.

A mature industrial consciousness seeks to manipulate the environment in such a way that it can always provide continuous use. One not only talks of farming in the old conventional sense, but of farming the forests and harvesting oceans. We learn that there are limits to our exploitation. The environment and its resources need to be protected from undue exploitation—an unthinkable concept in a preindustrial or early industrial society.*

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* *The Environment is Not What It Used to be*, by Rubin Nelson, Environment Update, ENVIRONMENT CANADA, March 1984.

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Lesson 4 Our Common Future

Purpose The purpose of this lesson is to conclude the introduction to sustainable development issues through individual and small group reaction to the video *Our Common Future*. This lesson is dependent on the availability of the video and is therefore optional. If used it can serve as an evaluation of the students' understanding of the nature of sustainable development.

Objectives Students will be able to:

1. Identify development problems facing the world today.
2. See the interrelatedness of many of the problems.
3. Understand the role sustainable development plays in the solution of these problems.
4. Practice problem-solving skills in reaction to the identified problems.

Materials 12 minute version of the video *Our Common Future,* available for about an $8 rental fee from the Global Tomorrow Coalition, 1325 G St. NW, Suite 1010, Washington, DC 20005-3104; (202) 628-4016.

Available for purchase from Centre for Our Common Future, Palais Wilson, 52 rue des Paquis, CH - 1201, Geneva, Switzerland.

Procedure Our Common Future

1. Before showing the video, tell the students as they watch it to write down the problems it mentions (e.g., ozone depletion, destruction of the rainforest, etc.)
2. Show the 12 minute version of the video *Our Common Future.*
3. Discussion questions:
   a. What objects or images stand out in your mind from the video? (For example, a machete or fire. This objective kind of question can be used to get a lot of students participating.)
   b. What are some of the problems that the video discusses? (Write the problems all over the board.)
   c. According to the video, how are these problems connected with one another? (Draw lines from one to another to show these connections.)
   d. What does the video propose as a solution to all these interconnected problems? (sustainable development)
   e. Who came up with the idea of "sustainable development?" (the World Commission on Environment and Development of the United Nations)
   f. What is the definition of "sustainable development" given in the video?
   g. Divide the class into cooperative learning groups of three to five students. Each group is responsible for brainstorming

solutions to as many problems as possible and then illustrating in some form (orally, artistically, dramatically, musically, etc.) the proposed solution to one of the problems. Whole group sharing concludes the lesson.

Lesson 5 What's In A Name?

Purpose The purpose of this activity is to make students aware of the value-laden nature of terms associated with "development" and to understand all societies are in the process of developing.

Objectives As a result of this activity, students will be able to:

1. Define basic development vocabulary and recognize nuances associated with these terms.
2. Recognize stereotypic statements regarding development.
3. Identify commonalities of development processes across all societies, all nations.

Time Required One class period.

Materials Needed Foils 1 and 2 (from Lesson 1)
Sustainable Development
Handout 5
Definitions

Procedures What's in a Name

1. Instruct the class to divide a piece of paper into three columns and to label the columns: POSITIVE, NEUTRAL, and NEGATIVE.
2. Tell the class: Place each of the following words or phrases into one of the three columns on your paper, based on your first reactions.
3. Read the list (or selected portions of it) allowing time for students to do the assignment.

develop	traditional
development	industrialized
underdeveloped	First World
overdeveloped	Second World
mal-developed	Third World
modern	sustainable development

4. Divide the class into groups of three.
5. Have each group compare their columns.
   a. What images came into your minds as you heard these terms?
   b. What words or phrases need to be defined?
   c. Why did you place the words in the particular columns you chose?
6. Conduct a class discussion based on the results of the small group discussions.
   a. List the words and phrases that need to be defined. Ask for student definitions; clarify or correct as necessary.

b. Distribute Handout 5, *Definitions*. Read through the definitions with the class pausing to clarify concepts when necessary.

c. Write on the board words that represent the nuances the students expressed in relation to the development terms. (e.g., good, great, dumb, awful, can't take care of themselves, becoming like us, different...)

d. How do these connotations affect the way we feel or think about ourselves or about other countries and groups of people when we see these terms in the news media or in our readings?

e. Why would some writers use certain of these terms and not others?

f. How might you take these connotations into account as you study development topics? (E.g., Try to use names for others that they use for themselves. Suspend judgment at least while we are trying to understand others from their standpoint. When making judgments about others, don't put them down for being different, but try to understand the reasons for the differences...)

7. Remind students of the definition of sustainable development: "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." Refer back to Foils 1 and 2, *Sustainable Development*.

8. Reinforce the notion that one of the assumptions of sustainable development is that all societies, all nations are "developing." We're all in the process. We look at past and present societies, in part, to see how they met their needs and their wants, why they did it the ways they did...to see how they dealt with the relationships among these three essential factors (environment, development and equity), and especially to see what we might learn from these other examples to help us solve some of the world's problems we're facing today.

Alternative Procedure

The following word association activity can also be conducted as a briefer, whole class exercise.

1. Ask: What do you think of when you hear this word? Go through the list quickly.
2. When appropriate, ask why they're making these associations.

Definitions

develop Literally, to cause to grow gradually in some way; to cause to become gradually fuller, larger, better etc.

development In the field of international development, the process of improving the quality of human lives in many areas, including: income and consumption levels; social, political, and economic institutions; and freedom of choice. The term is sometimes used narrowly to mean economic growth.

underdeveloped A comparative concept expressing a relationship of exploitation, i.e., some countries are economically "developed" because others are not.

overdeveloped Also a comparative concept in which some countries are using more than their fair share of resources.

mal-developed A country's state of development is having a negative—and possibly even an evil—effect on others' abilities to develop.

modern Characteristic of the present or recent time.

traditional Pertaining to, or derived from the past.

industrialized Often used to refer to those countries whose gross national product comes primarily from industrial activity, not agriculture.

First World The countries of western Europe, the United States, Canada, Australia, New Zealand and Japan, which have industrialized market economies.

Second World The countries of eastern Europe, including the former Soviet Union, which have had centrally planned economies.

Third World The term came into use in the Cold War Era when it was applied to those countries committed neither to Communism nor to a Western system of government and hence had a primarily political connotation. "Third World" was originally coined in the early 1960's by French demographer Alfred Sauvy in reference to the role of the "Third Estate" in the French Revolution. "Third World" has come to refer generally to the nations of Africa, Asia, Latin America, and Oceania and has taken on a primarily economic connotation.

sustainable development Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Lesson 6 Values and Sustainable Development

Purpose The purpose of this lesson is to explore the cultural side of the concept of sustainable development.

Objective To understand how the values held by the people in a culture may either help or hinder the economic development of this culture.

Materials One copy of Handout 6
Values and Economic Development
and Handout 7
Sources of Value Statements
for each student.

Time Required 1 to 2 class periods.

Procedures Values and Sustainable Development

1. Divide the class into heterogeneous cooperative learning groups of three students per group. Distribute Handout 6 and explain that the first page contains statements that represent values some people hold, and the second page contains an interpretation or meaning for each of the value statements on the first. Instruct each group to discuss and come to a consensus about which statements match with which interpretations. They are to write the letter of the correct interpretation on the line at the end of each value statement. Encourage discussion of the meanings and provide assistance when needed for those who might find the nature of some of the statements mystifying. Do not show the origin of any of the statements at this time.
2. Answer key for matching

1 h	4 a	7 l	10 k
2 b	5 f	8 i	11 c
3 d	6 g	9 j	12 e

   Bring the class together for a discussion of the matching results. Use this discussion to dispel any lingering misinterpretations of the statements.
3. Have the students individually read through the *Values and Economic Development* list and, in the parentheses ( ) in front of each statement, put a:
   - **+** in front of the values with which they agree;
   - **—** in front of the values with which they disagree;
   - **0** in front of the values on which they have no opinion or are unsure.

4. Have the students explain why they agree or disagree with the statements.
5. Ask which statements appear to reflect our society and which reflect other cultures.
6. Analyze the statements to determine which would reflect values that might either assist or hinder sustainable development.
7. Share with the class the origins of the statements (Handout 7).
8. Evaluate #6 in light of the information in #7.

Evaluation Discuss with the students their feelings about any relationships between values and development.

Lesson Extension Provide large poster paper and markers/crayons etc. Ask each of the original small groups to illustrate any two of the statements with the statements themselves concealed on the backs of the illustrations. Collect all of the illustrated statements and display them to the class, soliciting guesses as to which statement each illustration conveys and why. This could serve as an informal assessment of the students' grasp of the concepts involved. As each illustration is correctly identified, the discussion should focus again on whether the value represented helps or hinders sustainable development. The illustrations should be hung in separate sections of the room to visually reinforce this dichotomy.

Values and Economic Development

( ) 1. "Life is but a savage test
Of who is least and who is best.
Those who fall must lack the wit;
The winners are the ones most fit.
It may seem harsh, but shun the whine.
Take in your breath and toe the line.
There'll always be the ones who lose;
'Tis for God, not us, to choose." ____

( ) 2. "A man with a large family is a real man." ____

( ) 3. "It is thrifty today to prepare for the wants of tomorrow." ____

( ) 4. "If you give a man a fish, he will have a single meal. If you teach him how to fish, he will eat all his life." ____

( ) 5. "Development is broadly culture dependent. Progress is based on what is considered important, and this depends on culture." ____

( ) 6. "If a free society cannot help the many who are poor, it cannot save the few who are rich." ____

( ) 7. "Our necessities are few, but our wants are endless." ____

( ) 8. "The love of money is the root of all evil." ____

( ) 9. "The lack of money is the root of all evil." ____

( ) 10. "The white man knows how to make everything, but he does not know how to distribute it." ____

( ) 11. "May you live long and beget eight children." ____

( ) 12. "Hard work is good for the soul." ____

An Interpretation of the Value Statements

Directions Below are interpretations of the statements from the previous page. Match the interpretations below with the statements on the previous page by writing the letter of the interpretation in the blank space at the end of each statement.

a. This person believes that preparing a person to take care of himself/herself is more important than simply feeding the hungry.

b. Having many children is a sign of being a man. A person who believes this would not favor any attempts to limit population.

c. This statement implies that a person should have many children.

d. We should prepare today for the needs of tomorrow. This person plans for the future.

e. This statement implies that hard work is good for a person.

f. A culture will emphasize those things that are important to its culture.

g. This statement implies an obligation by the rich to help the poor.

h. This is a statement of survival of the fittest. It implies that God chooses those who are worthy. A person who believes this would feel that some people would not develop because they were not worthy.

i. This statement implies that seeking material wealth is the cause of most of society's problems.

j. This statement implies that being poor is the cause of most of society's problems.

k. This statement implies that even though Europeans have solved the problem of production, there are still great disparities in wealth.

l. This statement implies that what we need to survive is small. It also implies that we want more material things than we need.

Sources of Value Statements

1. American businessman of the 1880's
2. Juan de la Cruz, resident of Santo Domingo, Dominican Republic
3. Aesop's Fables, "The Ant and the Grasshopper"
4. Chinese proverb
5. Joseph Olspaku, Nigerian writer and publisher
6. President John Kennedy, Inaugural Address 1961
7. Inscription on a fortune cookie
8. New Testament
9. George Bernard Shaw
10. Sitting Bull
11. Traditional Hindu wedding blessing
12. Protestant work ethic

Lesson 7 How is Sustainable Development Like a Seed?

Purpose The purpose of this lesson is to develop a deeper understanding of the concept of sustainable development through analogical thinking by approaching the concept from a divergent perspective.

Objectives Students will be able to:

1. See connections between previously understood and seemingly unrelated concepts and the concept of sustainable development.
2. Use those connections to acquire a deeper understanding of sustainable development.

Time required One class period.

Procedure How is Sustainable Development Like a Seed?

1. Have each student individually generate a list of words which come to mind when she/he thinks about the concept of sustainable development.
2. Have each student share her/his individual list with a partner in an attempt to extend both lists.
3. Write the following question on the chalkboard:
   How is sustainable development like a seed?
4. Focus discussion on the concept of a "seed". Elicit from the students ideas which come to mind when they think of the word seed (e.g., seeds are a source of life, each generation of seeds provides a life-link to the past, seeds must be nurtured to survive, each generation of seeds makes it possible for the next to exist...).
5. Have the students refer back to the lists of words dealing with sustainable development generated at the start of this activity. Discuss with the class how sustainable development is similar to and different from a seed.
6. Record results in columns on the board labeled "Similar" and "Different".
7. Encourage students to empathize with the concept. Ask students questions to have them feel they are what they are describing: *What would they need if they were a seed? What concerns would they have? What could they accomplish? How would they feel?*
8. Elicit responses and record key words on the board. Select two which are opposites or which seem to be contradictory (like nurture-needy and life-sustaining). Explore the apparent contradiction and establish a bridge to the original topic that allows insight into the essence of the concept.
9. Have students pick out other conflicting words from the board and explain how both are accurate descriptions of the concept.

10. Have students volunteer their own direct analogies and explain the comparison (How is sustainable development like a diamond? A gift? An inheritance? etc.)

Evaluation Using their new perspectives on sustainable development, students could write poems or essays about the concept, create collages, or otherwise illustrate a conflicting pair of descriptive attributes with a written explanation of the attributes' validity below the illustration.

Lesson 8 Cultural Assumptions and Sustainable Development

Purpose Students will explore some culturally-based assumptions about relationships between human beings and the environment in order to clarify their own values and their understanding of the concept of "sustainable development."

Objectives Students will be able to:

1. Define such key terms and concepts as "cultural assumptions," "resources," "material standards of living," "success," "freedom."
2. Analyze social/cultural and economic elements in development.
3. Formulate and investigate development-related questions for further study.
4. Make judgments on value statements, expressing agreement and disagreement.
5. Clarify their understanding of one interpretation of a "Western" perspective on human-environmental interactions.
6. Re-write some of the value statements to reflect the students' understanding of the concept of "sustainable development."

Time Required One class period.

Materials Needed Handout 8
Cultural Assumptions and Sustainable Development.

Procedures Cultural Assumptions

1. Hold an object such as a pencil in your hand. Ask the class what they believe will happen if you let go of the pencil. Ask them how they knew the pencil would fall (after you have "proven" that it will in fact fall).
2. If no one comes up with the concept of an "assumption", provide it for the class and elicit its definition: something which is taken for granted, anything we accept as fact without requiring proof.
3. Provide some other examples of assumptions (liquids are wet, summer follows spring). Elicit others from the class.
4. Provide the class with the following categories: *home, school, family.* Have the students provide related assumptions for each.
5. Introduce the category of *cultural* assumptions through examples many Americans have never challenged. (E.g., wealth is the measure of success; physical bravery is the definition of courage; working harder is the key to solving difficult problems.)
6. Divide the class into pairs.
7. Distribute Handout 8.

8. Tell the students to complete the first three steps in the directions individually.
9. When they have finished marking their lists, have students do the final step together with their partners.
10. Debrief the total class by asking such questions as:
    a. What are some of the statements with which you agreed? Disagreed?
    b. Where was there agreement or disagreement within your small groups?
    c. Let's hear some of the statements that you rewrote.
    d. How do these reflect the meaning of "sustainable development"?

Evaluation Collect the rewritten statements produced during procedure 8 and evaluate them in terms of the students' understanding of the cultural assumptions presented and the degree to which the rewritten statements agree with the tenets of sustainable development.

Cultural Assumptions and Sustainable Development

We all have assumptions, but what is an assumption? An assumption is anything we take for granted, anything we accept as a fact without asking for proof.

As people have become more aware of problems in our environment, some have suggested the roots of these problems lie in cultural assumptions that many Americans (and others!) have never challenged. Here is one such listing of cultural assumptions about the relationship of the environment and human beings.

Directions By yourself:

1. Put a **+** by those with which you agree.
2. Put an **O** by those with which you disagree.
3. Put a **?** by those with which you are not sure if you agree or disagree.

With your partner:

4. Pick three statements and rewrite them to support more fully the idea of "sustainable development."

____1. Nature has an almost unlimited amount of resources intended for human use.

____2. Human beings have the right to use natural resources in order to continue improving the style in which they live.

____3. A continuing improvement in the way we live is guaranteed if the economy continues to grow.

____4. The future is ours to shape; people can make history turn out right through the careful use of human powers.

____5. Effective problem-solving can overcome human failures.

____6. Whatever can be known scientifically should be known; whatever can be done technologically should be done.

____7. The successful person is the one with visible achievements.

____8. Competitive, achievement-oriented behavior is good for both individuals and society as a whole.

____9. Hardworking, risk-taking, educated people will attain their goals.

___10. There is freedom in material abundance.

Lesson 9 Africa and the Industrial Revolution

Purpose

This lesson on *Africa and the Industrial Revolution* may be incorporated in a unit on the Industrial Revolution. However, it may also be applied to units on Colonialism and Imperialism. The lesson is designed to be used selectively. Teachers are encouraged to use as much or as little of the material as desired.

Objectives

Students will understand that:

1. Sustainable development meets the needs of the present without compromising the ability of future generations to meet their own needs.
2. The concept of equity is the principle of fairness and justice.
3. In order for sustainable development to be achieved, people must have an equitable share in the economic development and political activities of the society.
4. The labor of African men and women contributed to the Industrial Revolution.
5. Slavery is related to the Industrial Revolution.
6. History provides an explanation for the technological and industrial "development" of Europe and the Americas and the technological and industrial "underdevelopment" of Africa, namely, that the Industrial Revolution economically "developed" Europe and the Americas as it economically "underdeveloped" Africa. (Walter Rodney's terms).
7. The Industrial Revolution contributed to the dilemma of inequity in the contemporary world.

Time Required

2 to 5 days.

Materials Needed

Student text
Lesson plan on Africa and the Industrial Revolution
Handouts 9, 10, 11 (foils and overhead optional)
Cotton balls
Large spool of thread
Piece of cotton cloth
Piece of cotton clothing, e.g., shirt, blouse

Background

Students will have studied the introductory part of a unit on the Industrial Revolution and will already understand why the Agricultural Revolution occurred in England and how inventions sparked the Industrial Revolution.

Introductory Review

The Industrial Revolution has been defined as a "long, slow process in which production shifted from hand tools to machines and in which

new sources of power such as steam and electricity replaced human and animal power." (Student text: Beers, p. 428)

During the first stage of the Industrial Revolution from about 1750 - 1850, Great Britain took the lead in shifting to new methods of production.

During the second stage, from the mid-1800's to about 1914, the nations of Western Europe and the United States developed into modern industrial powers.

The Industrial Revolution completely transformed the patterns of life in these regions as well as the patterns of life in other regions around the world.

Procedures Introductory Set

1. Display:
   a. cotton balls
   b. a large spool of thread
   c. a piece of cotton cloth
   d. a finished piece of cotton clothing
2. Objective: Students will understand the relationship of these four items to the Industrial Revolution. Students will understand that:
   a. Cotton, symbolized by the cotton balls, was grown on the plantations of the United States and manufactured into cloth in American factories during the Industrial Revolution;
   b. Cotton was grown and collected by slaves who had been captured and taken from their homes in Africa and exported to the Americas during the 17th and 18th centuries.
3. Possible discussion questions include:
   a. How do the four items displayed relate to the Industrial Revolution?
   b. Who grew and collected the cotton produced for the textile industries of the United States and Britain?

New Information The teacher may incorporate as much of the new information as desired on *Africa and the Industrial Revolution* provided on student handouts.

Foils may be made from these handouts and displayed with an overhead projector.

The following basic outline of the new information may be put on the blackboard:

Procedures Outline

1. European capitalism set the Atlantic slave trade and slavery in the Americas in motion.
2. Throughout the 17th and 18th centuries, exploitation of Africa and African labor produced capital for Europe and the Americas.

3. The trade:
   a. Sent cheap goods from Europe to West Africa in order to buy captives;
   b. Sent African men and women to the Americas as slaves;and
   c. Sent finished goods produced in America to Europe.
4. American economic development rested on the pivot of slavery.
5. In the 1830's slave-grown cotton accounted for approximately half the value of all exports from the United States.

Teacher Background Slavery and the Social Systems of Africa

1. African systems were based on economies of subsistence.
2. These economies were not significantly changed by trade.
3. They had no regular type of wage labor.
4. Men and women were organized in age sets for traditionally accepted forms of labor.
5. Free labor services were imposed on certain groups.
6. These workers in African societies were not considered slaves but integral members of their communities.
7. They lived with their masters, could work free of obligations, and marry into the master's family.
8. The sale of Africans to European sea merchants did not deviate from practices of exchanging servile persons within Africa or within Europe.
9. The initial difference—slaves were sold for transport overseas to North America.
10. The number of slaves going to Europe was small.

Note: Refer to Beers, pp. 513-514.

Discussion Through discussion, students should understand:

1. The Industrial Revolution resulted in economic and technological development for some of the peoples of the United States and Europe. The Industrial Revolution also affected the peoples of Africa.
2. According to the historian Walter Rodney, the Industrial Revolution disrupted the economic and technological development of the peoples of Africa.
3. In his book titled: *How Europe Underdeveloped Africa*, Walter Rodney claims that the slave trade supported the Industrial Revolution. African labor was exported from Africa leaving the continent stripped of her strongest workers. These workers produced cotton which developed the textile industries of Europe and America.
4. Therefore, according to Rodney, these African workers developed Europe and the Americas and did not develop Africa. From Rodney's perspective, the slave trade in relationship to the Industrial Revolution economically "developed" Europe and the Americas as it economically "underdeveloped" Africa.
5. The principle of equity allows the individual in a society to satisfy his or her basic needs without prejudice to gender, race, or

heritage. In order for sustainable development to be achieved, each citizen must have an equitable share in the economic development and political activities of the society.

Possible Discussion Questions

1. To what extent do you agree or disagree with the premise that the Industrial Revolution disrupted the economic and technological development of the peoples of Africa? Support your position with evidence.
2. What impact did the warfare related to the slave trade have on the peoples of Africa?
3. Compare and contrast the domestic slavery systems and inequities of Africa and Europe with the plantation slavery system and inequities of the Americas.
4. Did the Industrial Revolution contribute to the dilemma of inequity in the contemporary world? Explain.
5. To what extent are Europeans and Americans responsible for the existing poverty in present-day sub-Saharan Africa?
6. What lessons about equity does the impact of the Industrial Revolution on Africa teach us for the future? Be as specific as you can.
7. Can the struggle to end slavery in the past be compared to the struggle to end inequity today? What lessons might one learn from the former to achieve the latter?
8. Would economic development be more sustainable over centuries if it redressed past and present inequities?

Note: See the "Effects of the slave trade on Africa" notes on Handout 10.

Additional Activities

1. The introductory set using the cotton balls, thread, and cloth, could be expanded into a full class activity. Students could research the production of cotton by exploring some of the following lines of inquiry:
   a. Has cotton been grown in other parts of the world? Where and when?
   b. How much cotton was produced at specific times in specific places? What price did the cotton bring? Where was the cotton sold?
   c. How did the raw cotton actually get processed into thread and cloth?
   d. How did the cotton and finished products get transported?
   e. Who grew the cotton? Were slaves employed in these locales? Why or why not?
   f. What values and beliefs were the basis for the acceptance of slavery? Where did slavery exist?
   g. How have values and beliefs concerning slavery changed over time? Why?

h. Compare current debates over commodities and manufactured goods with the situation of the 1700's and 1800's in the United States of America.

2. Students could also experiment with scenario writing or socio-drama. Imaginative questions such as the following could be employed:
   a. What would the world look like today if the historical process had been reversed and Europeans and Americans had been taken to Africa as slaves?
   b. What are some of the products that would have been developed by the Industrial Revolution in Africa?
   c. What would have been the indicators of wealth and power?
   d. Would there be any new names on the map today?
3. A small group of students might be interested in developing a "board game" using a map or the actual physical classroom. Here are some initial ideas that would need additional development by the teacher.
   a. Students could be divided into continents or countries.
   b. Students could be given artifacts to represent cotton, manufactured goods, money.
   c. Then, students could be moved by a "trader." Africans could be moved into American slavery. In this way, students would get an experiential feel for the process.
   d. Students could be asked to generate hypotheses as to the effects of x, y, or z including factors such as the decrease of population in Africa, and the introduction of firearms.
   e. Students could then be assigned readings to test their hypotheses.
4. Possible Debate Topics:
   a. People and nations that accumulate wealth and power on the basis of such an immoral practice as slavery should not be allowed to keep the wealth.
   b. Because the West underdeveloped Africa by removing millions of Africa's most able workers in the slave trade, by destroying native cultures, and by imposing European culture and institutions during the colonial period, Europe and North America should give poor African countries, not aid, but reparations to make up for past injustices.
   c. A globally just economic or political system can be built on an inequitable foundation.
   d. All power flows either "from the barrel of a gun" or from "vaults of gold."
   e. An international statute of limitations regarding past inequities should be adopted by the nations of the world.

Evaluation This simple written assignment deals with the concepts of equity and sustainable development. Students can share their definitions of sustainable development with the rest of the class.

1. In one paragraph, define sustainable development. Explain the concept of equity in relationship to sustainable development.
2. In a second paragraph, analyze the Industrial Revolution in relationship to the concept of equity in sustainable development.

Sources

Beers, Burton F. World History: Patterns of Civilization. Englewood Cliffs, New Jersey: Prentice Hall, 1988.

Davidson, Basil. Africa in History: Themes and Outlines. New York: Macmillan Publishing Company, 1968.

Rodney, Walter. How Europe Underdeveloped Africa. Washington DC: Howard University Press, 1982.

Africa and the Industrial Revolution

Background

1. At first, slaves were used in Africa only when needed for household work.
2. This was true of East as well as West Africa.
3. There was no plantation system in Africa which could absorb large quantities of manual labor.
4. Little by little, Portuguese sailors took several thousand slaves a year to Europe for domestic labor.
5. Slave labor was familiar in medieval Europe.

The West African Slave Trade

1. Soon after 1492, the Spanish transported West African slaves across the Atlantic.
2. In 1510, the sale of African slaves in the Americas was legalized by Spain.
3. A regular slaving system developed.
4. The system endured for 3½ centuries.
5. Tens of millions of Africans were transported across the ocean.
6. The death of many other millions of African men and women was caused before their departure to the Americas.

The "discovery" of the Americas

1. Changed the face of Africa.
2. When America was "discovered" by the Europeans, slavery became a business.
3. Opening mines and plantations = hard, physical labor.
4. The American colonists unsuccessfully attempted to enslave the peoples of the many Native American nations.
5. Strong men and women were plentiful in Africa.
6. They were skilled in farming and mining and superior in these skills to Native Americans as well as Europeans.
7. The slave trade began as a continuation of a tradition of accepted forms of labor.
8. And it developed into a complicated business of kings, rich men and merchants in the 1680's.

African Warfare

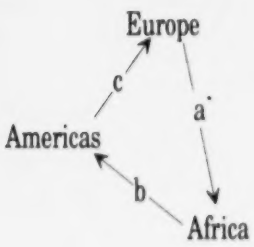
1. The enormous numbers demanded by the slave trade could only be provided through warfare.
2. Slaves were first captives.
3. African rulers collaborated with Europe in exploiting the peoples of Africa.
4. The demand for slave labor became insatiable.
5. Many African countries were completely depopulated.

The Slave Trade

Inhumanity of the system

1. By 1650 the slave trade was in full stride.
2. Brutality increased.
3. Captives.
4. Individuals were bought according to size, strength, and handsomeness.
5. Revolts took place on board the slave ships.
6. The horrors of the voyages of the dead and dying are recorded.

The Triangular Slave Trade and Capitalism



1. The triangular slave trade linking Europe, Africa and America produced capital for Europe and the Americas.
2. The trade:
   a. Sent cheap goods from Europe to West Africa in order to buy captives to be sold as slaves.
   b. Sent slaves from Africa to the Americas in order to buy sugar, tobacco, and cotton.
   c. Sent sugar, tobacco, and cotton from the Americas to Europe for cash.
3. The triangular slave trade supported the Industrial Revolution, especially through the textile industry.
4. The slave trade produced capital for Europe.
5. American economic development rested on the pivot of slavery.
6. In the 1830's, slave-grown cotton accounted for approximately half the value of all exports from the United States.

The Effects of slave trade on Africa

1. Resulted in the depopulation of the continent over 3-4 centuries through:
   a. the deportation or
   b. death of several tens of millions of Africans.
2. The families of these tens of millions of slaves were also affected.
3. African societies were deprived of their best producers, the youngest and strongest men and women, regularly over a long period.
4. Cheap industrial goods, mainly cotton, metalware and firearms, were exchanged for the "raw material" of African labor—African life.
5. Local production of cotton goods and metalware was undermined by flooding Africa with cheap substitutes.
6. Industrial expansion was severely hampered—even at the handcraft stage.
7. The trade may be seen as an early type of colonial economy of exchange of European goods for African raw materials.

Effects of the Slave Trade

Political effects

1. The political effects were worse than the economic effects.
2. The demand for slaves far exceeded the supply.
3. African kings and merchants would not supply their own people as slaves.
4. They had to obtain captives by warfare or violence.
5. Without captives, they could not hope for European trade.
6. Wars and raids multiplied.
7. Pressure increased for firearms and ammunition which could be only bought from Europe.
8. The need for captives led to the need for firearms.
9. The need for firearms led to the need for still more captives and still more firearms, i.e. vicious circle.

Significance

1. The degradation of slavery went far beyond the slaving ships and plantations.
2. It created contempt for African humanity.
3. Fresh ideas and attitudes of racial superiority took root.
4. Slave trade was invaluable to Western Europe and the Americas.
5. It was disastrous for West Africa and the entire continent of Africa.

Conclusions

1. European and African rulers and merchants were involved in a trade that was morally degrading for both.
2. Europe—the slave trade was economically beneficial.
3. Africa—the slave trade was economically destructive and politically disastrous.
4. Slave trade—grim effects causing previously unknown violence and deepening despair among the peoples of Africa.

Lesson 10 The Quality of Life and Sustainable Development

Purpose The student will study data on the quality of life of people in a country. This study should help the student understand the issue of equity and how it relates to sustainable development.

Objectives Students will be able to:

1. Define key terms and concepts from the field of development, including the following: Physical Quality of Life Index, per capita gross national product (GNP), life expectancy, literacy, infant mortality, and equity.
2. Understand and use the vocabulary of sustainable development, applying the concept of equity to the interpretation of statistical data.
3. Analyze some of the social and economic issues in development.
4. Formulate and investigate development-related questions regarding quality of life.

Time Required Two to four class periods, depending on the amount of information given to the students and the format used to teach the lesson.

Materials Needed Each student should receive a copy of Handout 12.

Procedures Physical Quality of Life (background at end of lesson)

1. After distributing Handout 12, the teacher should spend time defining and explaining terms on the chart. Allow time for students to ask questions about the terms.
2. Divide the class into small groups of three or four students. Before the groups begin to work, explain to the class that it may be very hard to get all of the countries in the exact location. It may be good enough to place the country in the proper quarter of the chart. Give the class 15-20 minutes to write the names of countries on the chart. Be certain to observe the discussions that take place in the small groups as the students analyze the data looking for clues.
3. Have each group put their final list on the chalkboard. Allow each group time to explain anything that influenced their decision-making.
4. Place the correct list from Handout 13 on the chalkboard. Have the students compare this list with the lists created by each group.
5. Conduct a discussion around the following topics:
   a. What countries have a high percentage of workers in agriculture?

b. Do these countries rank high in the number of calories or protein the people receive? If not, what might these discrepancies imply?
c. Are male and female literacy rates the same in most countries? Why or why not?
d. Is there a relationship between calories and life expectancy or infant mortality?
e. Compare the Physical Quality of Life list to the Per Capita G.N.P. What conclusions can you draw?
f. Does the location of any nation on the Physical Quality of Life list surprise you? Why?
g. What reasons do you think there are for these differences among countries?

Evaluation Ask the students to draw conclusions from the data on the chart. Examples:

1. Is there a relationship between economic development and a high quality of life?
2. Is a high quality of life essential for economic development?
3. What problems do the countries on the bottom half of the list face?
4. What problems do the countries on the top half of the list face?
5. What equity issues emerge as you analyze these data?
6. What suggestions would you offer to countries on the bottom half of the list? On the top half?

Alternate Lesson Formats:

1. Instead of giving the students the completed list, assign each student a country and have the students do library research to find the information. Each student could report their findings to the class. A computer data base could be created or the information could be placed on a blank form similar to the one used in this lesson. The discussion that would follow would be the same as in the original version of the lesson. You will need one or two days for library research depending upon how much help you want to provide in the research process. I have a personal preference for this format because the student begins to identify with the nation.
2. Conduct the lesson as is except limit the number of countries examined to eight or ten. Use Handout 14 and fill in the data for the countries you select, or alter Handout 12, Physical Quality of Life, to include only the number of countries deemed appropriate for the class. Before duplicating Handout 12, mask with blank paper the unwanted sections of the chart. Write on the chalkboard in alphabetical order the names of the countries you have decided to retain.
3. Optional graphing activity: select any two of the indices and cross graph them in an effort to discover, if not cause, at least coincidence of factors across countries.

Teacher Background

Physical Quality of Life

The Physical Quality of Life is a composite measure of human wellbeing based on social indicators, viz., life expectancy, infant mortality rate, and literacy rate. The Physical Quality of Life Index (PQLI) was developed by the Overseas Development Council.

Sustainable Development requires that the Physical Quality of Life be high enough to guarantee a reasonable existence for the people. The Physical Quality of Life can be described subjectively through descriptions of living conditions or objectively through the analysis of statistics. The three indices of the PQLI—life expectancy, infant mortality rate, and literacy rate—are each based on a scale of 1 to 100. The PQLI is an average of these three with 100 at the top and 1 at the bottom. Since this composite index, calculated by averaging the above three indices, is free from the distortions of monetary measurements, such as GNP, it may be a more accurate measure of the relative relationships of nations. It also avoids the problems of absolute standards, e.g., calorie intake, for which there may not be agreement.

An important caveat about global data is in order, however. The data used by most of these indicators, if not all, are reported by the nations themselves. Students should eventually understand that there is no guarantee for the absolute accuracy of any of the specific figures thus reported, but this information is the best anyone has to work with.

There tends to be a correlation between the PQLI and GNP per capita, but there are significant divergences. The oil rich Arab states have high per capita GNPs but low PQLIs, while the island of Sri Lanka with a low per capita GNP has a very high PQLI. Australia, France and Iceland with a PQLI of 100 are ranked 1, 2, and 3. The United States is 15th with a 98, while Afghanistan with a PQLI of 21 is ranked 170 out of 170.

Physical Quality of Life

Country	P.Q.L. Index		Per Capita GNP (US$)		Life Exp. (yrs.)		Literacy Male (%)		Literacy Female (%)		Infant Mort. /1000		Calories #/day		Protein grams */day		% Workers in Agriculture	
1	2	100	19	10740	28	76	22	99	21	99	161	8.0	15	3529	15	98.1	154	7.8
2	5	99	12	12850	4	78	9	100	9	100	171	5.2	54	2852	35	86.4	148	8.8
3	8	99	2	17840	6	77	15	100	15	100	168	5.9	34	3146	36	85.6	172	4.8
4	9	99	2	17840	1	78	16	100	16	100	167	6.8	18	3449	30	89.7	156	7.2
5	11	98			52	73	60	91	49	91	135	13.6	60	2796	56	70.4	119	18.3
6	15	98	3	17500	33	75	41	96	36	95	151	10.0	6	3641	4	104.7	179	3.1
7	38	91	66	1320	69	71	47	95	41	94	125	19.5	66	2759	44	73.9	126	15.1
8	43	91			93	69	5	100	5	100	118	25.0	21	3360	3	105.5	117	19.3
9	46	90	50	2330	78	70	43	96	26	72	102	35.3	26	3308	8	102.0	137	12.0
10	69	84	58	1850	84	69	64	78	52	70	88	50.0	51	2890	66	65.6	98	26.0
11	80	80	119	300	98	68	80	84	102	61	92	44.0	95	2426	77	62.8	39	62.5
12	87	77	59	1810	110	67	92	80	76	78	78	63.0	81	2578	73	63.4	87	29.8
13	91	74	87	790	130	61	86	58	68	57	72	69.0	91	2446	61	68.4	63	45.4
14	115	60	88	760	140	59	124	59	135	27	55	93.0	32	3175	51	71.3	69	41.2
15	125	55	127	270	147	56	133	55	138	26	49	104.0	145	2056	137	48.6	38	62.6
16	141	43	138	160	168	51	141	43	140	22	18	135.0	165	1837	153	43.0	45	58.8
17	148	41	116	320	162	52	146	37	157	7	42	112.0	110	2314	85	60.7	33	65.8
18	156	34		160	200	38	149	36	162	0.5	14	143.0	170	1762	88	60.1	10	83.3
19	160	29	136	170	193	45	135	14	132	3	21	132.0	109	2326	139	48.5	24	71.9
20	169	25	144	120	170	50	164	9	163	0.5	32	118.0	166	1793	74	63.3		80.0
	Countries ranked by P.Q.L. Index											**Rank**				**Value**		

Rank is out of all reporting countries in each category.

Countries included in the table, listed alphabetically, not in the order they appear in the table.

Argentina	China	Guinea-Bissau	Sudan
Bangladesh	Cuba	India	Sweden
Brazil	Eqypt	Japan	Switzerland
Chad	Ethiopia	Mexico	The former U.S.S.R.
Chile	France	Nicaragua	United States

Physical Quality of Life Answer Sheet*

1. France
2. Japan
3. Sweden
4. Switzerland
5. Cuba
6. United States
7. Chile
8. The former U.S.S.R.
9. Argentina
10. Mexico
11. China
12. Brazil
13. Nicaragua
14. Eqypt
15. India
16. Bangladesh
17. Sudan
18. Chad
19. Guinea-Bissau
20. Ethiopia

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* Note: The countries are listed according to their rank in the Physical Quality of Life Index, column 1.

Source: Kurian, Thomas, The New Book of World Rankings, 1991.
(Data on protein is from the 1984 edition.)

Physical Quality of Life

Country	P.Q.L. Index		Per Capita GNP (US$)		Life Exp. (yrs.)		Literacy Male (%)		Literacy Female (%)		Infant Mort. /1000		Calories #/day		Protein grams /day		% Workers in Agriculture	
1																		
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

Countries ranked by P.Q.L. Index [ ] **Rank** [ ] **Value**

Rank is out of all reporting countries in each category.

Countries included in the table, listed alphabetically, not in the order they appear in the table.

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Lesson 11 Decisions for a "Developing" Nation

Purpose The purpose of this activity is to engage students in a decision-making situation that some countries face. In trying to make decisions about the best way to achieve sustainable development, countries have to deal with political, ideological and cultural factors which have a major impact on the decision-making process. Each student develops an understanding of how diverse and conflicting interests influence economic decision-making in "developing" nations, especially when equity issues are involved.

Objectives Students will be able to:

1. Analyze factors that influence the decision-making process.
2. Identify long-term and short-term consequences of the adoption of each project.
3. Assess each program to determine the extent to which each project helps the country achieve sustainable development.

Time Required Two class periods.

Materials Needed

Handout 15
Decisions for a Developing Nation - for each student.

Handout 16
Roles - Duplicate this handout, cut out the five roles and assign each student one role.

Procedures Decisions for a "Developing" Nation

1. Distribute to each student Handout 15 and one of the roles from Handout 15. There will be several students with the same role. Students are not to divulge their role or objectives.
2. Announce to the class that you will take several minutes to help anyone who does not understand any word or term used in the description of her/his role. The following terms in particular may need clarification: ethnic group, ruling party, political stability/ instability, resource base.
3. Students are to follow the directions on Handout 15. Allow approximately 15 minutes for students to complete steps in directions a. and b.
4. The balance of the class time, and possibly some time the following class period, is to be used as a mock national legislative body in which step c. is to be completed.
5. The teacher, or a student selected by the mock national legislature, is to conduct the legislative debate and the vote to determine which programs will be funded.

6. After the class has completed the task, the class is to analyze the difficulties they encountered in making decisions and assess the impact of the class' decision on achieving environmentally balanced development, equity and an improvement of the physical quality of life. Each student is to identify the role and position they took, and their approach to the situation.

Evaluation Teacher observation of student participation An assigned essay analyzing the difficulties the students encountered in making decisions and assessing the impact of the class' decision on achieving sustainable development

Decisions for a "Developing" Nation

You are a member of the national legislative body of a "developing" country. Your government has allocated about US$7,500,000 in the budget for projects to improve economic growth and economic equity. The national legislature is to decide which programs will be funded.

Directions

a. Working independently, identify those projects you believe should be funded. Be sure to consider the special instructions you received on your role card. Do not share those instructions with anyone.
b. Be prepared to defend your choices.
c. Proposals will be presented to the legislature (the entire class), and members of the legislature will determine by majority vote which programs will be funded.

1.	Build primary schools to accommodate 200 students in 50 villages	$3,000,000
2.	Install systems to purify water in 200 villages	$2,000,000
3.	Build a highway for carrying lumber from a forest to a seaport from which it can be exported	$2,500,000
4.	Build, furnish, and equip four-room health centers in 50 villages	$1,700,000
5.	Make funds available to banks so they can make loans of $2,000 with very low interest charges to 500 farmers	$1,000,000
6.	Pay owners of the lumber business a subsidy to reduce the amount of lumber being cut to 2/3 of this year's amount	$2,000,000
7.	Finance the building of a small factory to make bicycles in the capital and develop a program to train factory workers	$1,000,000
8.	Train 100 high school graduates to teach in village schools and run literacy programs	$500,000
9.	Equip 20 minibuses to provide health care and family planning services in remote villages; train and pay salaries of workers on the buses	$1,000,000
10.	Make a survey of energy resources as a first step to reduce oil imports	$500,000
11.	Train 50 village fieldworkers and pay their salaries for a year; each of the fieldworkers will teach 100 farmers to use a new kind of seed and improved farming techniques	$100,000
12.	Build urban housing units for 250 families who are presently living in one-room shelters with no plumbing or electricity	$2,500,000
13.	Establish a family planning program throughout the nation, with regional information centers	$1,000,000

Roles

A. You are a member of an ethnic group that is opposed to a strong national government, especially since a rival ethnic group holds key executive positions.

B. You believe that immediate economic growth is more important than environmental concerns at this time in your nation's development, since it has one of the lowest standards of living in the area.

C. You are a member of the ruling party and of an ethnic group that has ruled the country for only a few years after decades of political instability.

D. You believe the immediate health and economic needs of the people must be met in order to assure political stability so that plans for long term growth can be developed.

E. You believe that the future of your nation depends on its conserving its resource base and avoiding industrial pollution, while at the same time promoting economic growth.

Chapter 3

An Analytical Framework for Sustainable Development

Introduction

How can students see connections between the usual topics and concepts covered in a world history or world cultures course and sustainable development? The matrix following the next page provides one way to help students develop a framework in which to analyze a society or a period of history by raising questions about the relationship of geographic, social/cultural, political and economic concepts and the elements of sustainable development. Once students have internalized the methodology of an analytical framework, they are equipped to develop their own categories and think critically and creatively about other relationships as well.

You will see that the matrix following the next page consists of a vertical list of topics fairly common to the social studies. The horizontal topics come from the three main elements of sustainable development, namely, the environment, development and equity.

The Analytical Framework is broken down into its component parts as worksheets on the pages following the matrix. Sufficient space is provided for students to be able to write questions in each box, questions that they would then research and answer in a report or a paper. Because there is nothing sacrosanct about the suggested topics, we also provide a blank worksheet so that you and your students can modify the topics or expand on any category.

Sample Questions Following the Analytical Framework you will find a list of sample questions for each box on the Framework. These questions are by no means definitive, but rather are suggestive. Their breadth attempts to reflect the richness of sustainable development as a mega-concept for helping to organize a course of study. We encourage you to work with your students to generate other questions to be explored that would relate more closely to your specific needs and interests.

Definitions The last section of this chapter contains a definition of each topic in the vertical column, a brief explanation of the relationship that we see between the topic and sustainable development, and an example of these relationships. These examples can serve as illustrations or as discussion starters with your students.

Uses The Analytical Framework can be used in a variety of ways as students approach each unit of study. For example, you may want to use it several times in the course of the year to reinforce its content. You may select only a few topics to be analyzed in a particular chapter or unit. You can assign different topics to different members of the class—either individually or as small groups—and have the class build a report based on the total Framework, or the Framework can be used as the basis for a research paper, class report or media presentation.

In our original project with high school teachers, we also discovered that the Analytical Framework can be extremely helpful as a curriculum development tool. Because the relationships among the environment, development and equity are rarely treated explicitly in most textbooks and because these relationships provoke much interest among students, you can use this Framework to supplement or replace the analytical perspective of your existing student materials. You can also use this Framework as a reminder to incorporate the breadth of sustainable development within your own preparations and teachings.

An Analytical Framework for Sustainable Development

"Sustainable development ... meets the needs of the present without compromising the ability of future generation to meet their own needs."

	Environment	Development	Equity
	Resources, Biosphere	**Economic, Political, Social, Cultural**	**Social Justice, End Poverty**
Geographic			
Location			
Place			
Human-environment interactions			
Movement			
Regions—physical and human			
Social/Cultural			
Belief systems/religion and values			
Problem solving approaches			
Education			
Language			
Social groupings			
Gender roles			
Asthetic expression/arts			
Political			
Power			
Governmental system(s)			
Security			
Conflict and resolution			
Economic			
Systems of trade and exchange			
Producing and manufacturing			
Property			
Division of labor			
Physical quality of life			
Transportation system			
Tools/technology/research			
Population			

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An Analytical Framework for Sustainable Development

Environment	Development	Equity
Resources, Biosphere	Economic, Political, Social, Cultural	Social Justice, End Poverty

Geographic

Location			
Place			
Human-environment interactions			
Movement			
Regions—physical and human			

"Sustainable development ... meets the needs of the present without compromising the ability of future generation to meet their own needs."

An Analytical Framework for Sustainable Development

Environment	Development	Equity
Resources, Biosphere	Economic, Political, Social, Cultural	Social Justice, End Poverty

Social/Cultural

Belief systems/ religion and values			
Problem solving approaches			
Education			
Language			
Social groupings			

"Sustainable development ... meets the needs of the present without compromising the ability of future generation to meet their own needs."

An Analytical Framework for Sustainable Development

Environment	Development	Equity
Resources, Biosphere	Economic, Political, Social, Cultural	Social Justice, End Poverty

Social/Cultural (Continued)

Gender roles			
Asthetic expression/ arts			

"Sustainable development ... meets the needs of the present without compromising the ability of future generation to meet their own needs."

An Analytical Framework for Sustainable Development

Environment	Development	Equity
Resources, Biosphere	Economic, Political, Social, Cultural	Social Justice, End Poverty

Political

Power			
Governmental system(s)			
Security			
Conflict and resolution			

"Sustainable development ... meets the needs of the present without compromising the ability of future generation to meet their own needs."

An Analytical Framework for Sustainable Development

Environment	Development	Equity
Resources, Biosphere	Economic, Political, Social, Cultural	Social Justice, End Poverty

Economic

Systems of trade and exchange			
Producing and manufac-turing			
Property			
Division of labor			
Physical quality of life			

"Sustainable development ... meets the needs of the present without compromising the ability of future generation to meet their own needs."

An Analytical Framework for Sustainable Development

Environment	Development	Equity
Resources, Biosphere	Economic, Political, Social, Cultural	Social Justice, End Poverty

Economic (Continued)

Transportation system			
Tools/ technology/ research			
Population			

"Sustainable development ... meets the needs of the present without compromising the ability of future generation to meet their own needs."

An Analytical Framework for Sustainable Development

Environment	Development	Equity
Resources, Biosphere	Economic, Political, Social, Cultural	Social Justice, End Poverty

Topics

"Sustainable development ... meets the needs of the present without compromising the ability of future generation to meet their own needs."

Directions

1. Write topics you are analyzing in the narrow column on the left.
2. Write questions about the relationship of each topic to the elements of sustainable development in the large blocks.
3. Research these topics to answer the questions you have generated.

Framework Sample Questions

Teachers are encouraged to involve their students in developing questions that will be used in analyzing a particular unit, period of history, or culture according to the topics suggested by this Analytical Framework.

The following questions are offered as beginning suggestions as to the kinds of questions that might be useful in seeing relationships between the elements of sustainable development (listed across the top) and the traditional social studies topics listed on the left side. The questions are listed in three columns according to the major elements of sustainable development. The main subtopics are also listed under each element as a reminder to develop questions across the breadth of these categories.

Geographic

Environment	Development	Equity
Location		
Locate the place being studied on a world map. What are its latitude and longitude? How is it connected to the last place studied (e.g., by land, water, air currents, technology)?	Using latitude and longitude on a world map, locate: the highest mountain; major rivers; major settlements/cities. Why were these cities originally located where they were? How did this location affect the development of this society over time?	Are there locations in which there are concentrations of poverty or affluence? If so, how do you account for these concentrations?
Place		
What are the distinctive physical characteristics (e.g. landforms, bodies of water, climate, soils, natural vegetation and animal life) that give this place its unique character?	What are the distinctive human characteristics (e.g., architecture, patterns of livelihood, land use and ownership, communication and transportation networks) that give this place its unique meaning?	How have languages, religions or political ideologies shaped the character of this place? Are the patterns of land use and ownership favorable or unfavorable to equity? Why?
Human-environment interactions		
What are three major effects that human activity has had on the environment of this particular place?	To what extent do people take into account the effect their actions might have on the environment? Why or why not?	What impact do wealthy people in this society have on the environment? What impact do poor people have on the environment?
Movement		
What natural resources are located in this place? How are they transported to other locations? To what extent are these resources being depleted and to what extent are they renewable?	What are the main means of travel? What communications systems are used? How have these transportation and communications systems affected the area's development?	To what extent do transportation and communications systems serve the needs of the indigenous people, or others? Why?
Regions—physical and human		
In what physical region is this society located? What are the physical characteristics that unify this region (e.g., grasslands, deserts, rain forests, mountains, polar)?	In what cultural region or regions is this society located? What are the human characteristics that unify this region? What human characteristics distinguish this region from bordering regions?	What resources in this region are used to indicate a person's relative wealth or poverty? To what extent is this wealth distributed widely or narrowly within the society? Why?

Social/Cultural

Environment	Development	Equity
Belief systems/religion and values		
How do the society's belief systems view the environment? What impact do these beliefs have on the use of resources?	What roles do the religious beliefs of the people play in either helping or hindering economic development?	How does the society define fairness/justice?
Problem solving approaches		
Why should the environment be considered when solving problems?	What are some of the major problems this society has faced as it has developed over time? How have they solved these problems? What might we learn today from this experience about solving problems?	Is inequity a problem? How is the society trying to solve problems of inequity and with what results?
Education		
What role does informal education play in educating the society's members about the environment? Formal education?	What role does informal education play in economic development? Formal education?	To what extent is formal education available to all members of the society?
Language		
In what ways does the language that is used about the environment reflect society's attitudes toward the environment—e.g., "manage," "respect," "stewardship," "manipulate..."	To what extent does a common language aid in economic and social development? Are diverse languages an obstacle to economic, social, and political development?	In what ways, if any, does language reflect inequities in the society?
Social groupings		
What impact do the various social groupings have on the environment?	What impact do the society's groupings have on the social development? On economic development?	Is there social mobility? What are the factors that allow for it or inhibit it?
Gender roles		
Do males and females in the society have different impacts on the environment?	How do gender roles affect economic development? How have gender roles changed over time and why?	Is the society dealing with any social justice issues associated with gender roles? If so, what, e.g., suffrage, ownership of property, persecution...?

Social/Cultural (Continued)

Environment	Development	Equity
Aesthetic expression/arts		
In what ways do the arts express attitudes/values toward the environment?	In what ways, if any, do the arts demonstrate or criticize the society's beliefs about the meaning of the "good life?"	What social justice themes, if any, are treated in the arts? Give examples.

Political

Environment	Development	Equity
Power		
Who decides how resources are used? What sectors of society are exerting influence on pollution issues?	What is power and what are its sources?	To what extent do interest groups have power to influence the directions taken regarding the economy? Regarding the type of government?
Governmental system(s)		
Are there governmental agencies involved in environmental issues? What are their approaches and how effective are they in protecting the environment?	How does the form of government affect the rate of economic development?	In what ways, if any, are governmental systems working to end poverty within the country? ...in the wider world?
Security		
Do the people in this society feel environmentally secure or insecure? Why?	How can political security of a nation help it meet its present needs? How does the society define economic security? To what extent are native peoples' cultures protected and preserved?	What issues of social injustice or poverty, if any, threaten the stability of the society?
Conflict and resolution		
To what extent is there open conflict between economic interests and environmental groups? How is the conflict expressed? To what extent are there indications of resolution of such conflicts?	What are some of the competing claims or interests within the development process? What methods, approaches or institutions are used to manage or resolve conflicts?	What segments of the society have access to conflict resolution resources or institutions?

Economic

Environment	Development	Equity
Economic		
To what extent is the economic system in harmony with the environment?	How do the forms of economic systems influence development?	Who makes the decisions in the various economic activities?
Systems of trade and exchange		
What natural resources are exploited or developed for purposes of trade and exchange? Which resources are nonrenewable and which are renewable?	What role does trade play in the society's process of economic development?	What provision, if any, is being made to assure future generations of access to the society's natural resources?
Producing and Manufacturing		
What are the impacts on the environment made by the systems of producing and manufacturing? Which are positive and which negative?	Do the systems of producing and manufacturing tend to be labor-intensive or capital-intensive? What are some of the consequences of this tendency toward labor- or capital-intensity?	Do the systems of producing and manufacturing contribute to the elimination of poverty, or do they tend to concentrate power and wealth into the hands of fewer and fewer people?
Property		
What impact do ownership patterns have on the preservation of natural resources and the biosphere? (e.g. private vs. public, individual vs. group)	What impact do ownership patterns have on development?	Are there any restrictions on ownership of property? If so, what are they? What are the patterns of ownership of property in this society?
Division of labor		
To what extent does the division of labor result in more efficient methods for using resources? Does it increase the rate at which nonrenewable resources are being consumed?	What is the general division of labor used? Has it changed recently, or in the period being studied? To what extent does the division of labor and individual specialization lead to greater production of necessary goods and services?	What social justice issues are evident regarding the division of labor?

Economic (Continued)

Environment	Development	Equity
Physical quality of life		
How does the quality of life of this society depend on the environment? Environmentally speaking, what is the physical quality of life in this society? Is it improving, staying the same, or declining?	What is the PQL Index for this society? Specifically, what is the life expectancy rate? Infant mortality rate? Literacy rate? Does the GNP per capita adequately reflect the actual quality of life in this society? To what extent is the PQL Index an adequate measure of the quality of life of the people?	Critique the PQL Index as a means for judging the degree of fairness in a society. Between societies. Do the indices indicate whether equity is present?
Transportation system		
On what resources does the transportation system rely? What impact does the transporation system have on the environment?	What is the role of an adequate transportation system in economic development? In political and social development?	Who has access to what elements of the transportation system? What impact does this accessibility have on the way the society has developed economically and socially? What issues of access remain to be resolved?
Tools/technology/research		
What resources are required for the society's tools and technology? To what extent are these resources renewable, recyclable, or nonrenewable? What impact do the different technologies have on the environment?	What kinds of tools and technology are used in the society? In what ways has the introduction of new technology had unanticipated consequences for this society?	In what ways, if any, are the society's tools, technology and research capabilities being harnessed to end poverty within the society? In the wider world?
Population		
What impact does a growing or declining population have on the environment?	How does the age, size, and composition of the population impact on economic development?	What is the distribution of wealth and resources among the population?

Framework Definitions and Examples

The Analytical Framework is a useful tool for infusing the concept of sustainable development into the units you teach throughout the year. This expanded section contains reference material explaining the analytical framework and supplements the matrix at the beginning of this chapter titled: *An Analytical Framework for Sustainable Development*. In this reference material, each element of the Geographic, Social/Cultural, Political, and Economic sections of the analytical framework is explained according to the following format:

a. **Definition of concept or term.**
b. **Kernel relationship of the term to sustainable development.**
c. **Examples.**

Geographic Elements

The five topics listed under "Geographic Elements" are the fundamental themes in geography that are currently being promoted by the National Council for Geographic Education, the Association of American Geographers and the National Geographic Society.

Location

Definition: Location answers the basic question: "Where?" Absolute and relative location are two ways of describing the positions of the Earth's physical and cultural features.

Relationship to Sustainable Development: Relative location refers to the many ways that places are connected, e.g., by land, by water, even by technology. These connections may have an impact on whether human activity will be sustainable over generations.

Example: The town of Chernobyl is located 51.16° north and 30.15° east, or 60 miles north of Kiev in the Soviet Union. On April 26, 1986, an accident at a nuclear reactor at Chernobyl caused the release of large amounts of radiation into the air. The outside world was unaware that anything was wrong until April 28th when nuclear technicians throughout Scandinavia detected abnormally high radiation levels. A study of wind patterns for the previous few days showed that the source of the radioactivity was Chernobyl. (Almanac p.381)

Place

Definition: All places on Earth have special features that distinguish them from other places and that can be described by physical and/or human characteristics.

Relationship to Sustainable Development: One way to describe places would be by characteristics that indicate whether or not the human activity there meets criteria of sustainability. For example, heavily industrialized societies can be described in part as having high degrees of air pollution within their industrial regions, a problem to be addressed if those societies are to achieve sustainability.

Example: "Cracow, Poland—This historic city of 800,000 people boasts 72 churches, 43 monasteries and 6,000 classic houses—all of which the government has declared to be national monuments. Preserving them, however, is proving to be a monumental task. While Cracow emerged from World War II untouched by bombing, emissions from a spate of peace-time metal and chemical industries now threaten to destroy its historic treasures with clouds of corrosive sulphur and fluoride-laden dust." (World Development, 3/90, pp. 8-9)

Human-environment interactions

Definition: People interact with their environments and change them in different ways. Human-environment interactions thus describe relationships within places.

Relationship to Sustainable Development: This theme is at the core of sustainable development, which strives to conserve the natural resource base and protect the biosphere.

Example: "Environmental reviews of proposed development projects, begun in 1976 by the Agency [for International Development], created an effective vehicle to conduct a dialogue with decision makers in developing nations. Policy changes resulted. The Central Selva Resource Management Project, which began in 1982 in the jungle of Peru's Palcazu Valley, is an example. The government of Peru, in its initial plans for the valley, projected large-scale agro-industrial development, including increased colonization of an area that contained large tracts of primary tropical rain forest... USAID's environmental assessment reoriented the project in favor of natural forest management as the principal activity with very limited small-scale agriculture in the area. No new colonists came to the valley. The existing inhabitants, including the Amuesha Indians, received title to their land and were legally recognized by Peruvian authorities...Through a subsequent loan agreement with USAID, the government of Peru designated part of the area as a national park and a protected forest." (USAID, p.6)

Movement

Definition: Movement refers to mobility of people, goods and ideas.

Relationship to Sustainable Development: One of the main reasons for large movements of people over time has been the search

for a safer, more secure and sustaining place in which to live. These movements also have a major impact on the environment.

Example: "The health and nutritional status of some of the Sudanese refugees now arriving [May 1988] in western Ethiopia is as bad or worse than anything seen during the terrible famine of 1984-6...The refugee situation in western Ethiopia is not new. Uprooted Sudanese started to arrive in substantial numbers during the first few months of 1983, fleeing from the intensifying conflict within the southern part of their homeland. Within three years their number had risen to just over 80,000, and by the beginning of 1987 the refugee population in Ethiopia stood at around 130,000...In the last six months [December 1987—May 1988] this situation has taken a dramatic turn for the worse, as the continuing civil strife in Sudan has been exacerbated by drought and acute shortages of food." (Refugees, p.15)

Regions

Definition: Regions are areas on the surface of the Earth that are defined by certain unifying characteristics, which may be physical or human.

Relationship to Sustainable Development: One way to study a region is to analyze those physical and/or human characteristics that support sustainability within the region and those characteristics that undermine sustainability.

Example: From 1968 to 1973, the Sahel Region in Africa was mostly identified in the mass media as a region of famine, resulting in part from a severe drought.

Social/Cultural Elements

Religion, belief systems and values

Definition: significant ideas and concepts that guide behavior.

Relationship to Sustainable Development: Sustainable development recognizes that significant ideas and concepts that guide behavior such as traditional customs affect economic, social, and cultural development.

Example: "...the modern economist has been brought up to consider 'labour' or work as little more than a necessary evil....The Buddhist point of view takes the function of work to be at least threefold: to give a man [sic] a chance to utilize and develop his faculties; to enable him to overcome his ego-centredness by joining with other people in a common task; and to bring forth the goods and services needed for a becoming existence....the consequences that flow from this view are endless." (Small Is Beautiful, pp. 54-5)

Problem solving approaches

Definition: methods of creating or discovering solutions.

Relationship to Sustainable Development: Sustainable development is open to a wide variety of methods through which people around the world discover their own solutions to meet the needs of the present without compromising the ability to meet future needs.

Example: Traditionally, various ethnic groups of Zaire used the Garcinia punctata tree as a prescription for diarrhea. They have used the resources of their environment to solve many of their health problems, and this information is being researched in modern laboratories for use in modern societies. For example, plants grown in Madagascar have veen used in developing certain treatments such as for Hodgkins disease and some forms of leukemia in children. This traditional problem solving approach is proving invaluable to modern science.

Education

Definition: process of formal or informal learning.

Relationship to Sustainable Development: Through formal or informal learning, people can learn to meet their needs without compromising the ability of future generations to meet their own needs by solving problems, anticipating alternative consequences, evaluating results and identifying personal and group responsibility.

Example: "Chaguite Grade, Honduras—It is late afternoon in this remote mountaintop village, and school is out for Norberto Coronado Andino, a fifth grader. But he remembers his environmental ABCs. 'You don't cut trees, you save them,' he tells a visitor. 'We need them to earn money, for the fresh air and because there would be no water without them.' Forty kilometres away, in El Achiote, Andres Mesa has continued farming and building a community three years after trees were cleared by the traditional slash and burn method. He used to seek out new forest land every few years. Encouraged by new farming techniques and seed varieties that he has been shown by extension agents [from Honduras' National School of Forestry Science], he has terraced the side of hills, sown corn, planted fruit trees and begun agitating for a better road into the village. 'We get ideas from elsewhere, but it is self-development,' he boasts."
(World Development, 1/90, p.20)

Language

Definition: A systematic means of communicating ideas or feelings by the use of conventionalized signs, sounds, gestures, or marks having understood meanings; the expression of thoughts, feelings, and concepts.

Relationship to Sustainable Development: Sustainable development depends upon the ability of people throughout a society to communicate effectively.

Example: The population of Tanzania in East Africa is made up of over 123 distinct ethnic groups speaking separate languages as

different as Chinese is from Greek. However, since independence, Swahili has been used as the national language and has served to unite the various ethnic groups into one nation. As a result, the individual has an identity as a Tanzanian citizen in addition to his or her identity as a member of a particular ethnic group. Leaders in Tanzania speak several languages: the language of their ethnic group; Swahili, the national language of Tanzania; and English.

Social groupings

Definition: a recognizable unit of people with common characteristics and interests.

Relationship to Sustainable Development: Through sustainable development, groups would meet their own needs without compromising the needs of the future and the ability of other groups to meet their own needs.

Example: The Minority Farmers' Rights Act (S 2881) was passed in the U.S. Senate as an amendment to the Farm Bill on July 26, 1990, by unanimous consent. The bill, which requires approval in the House of Representatives, seeks to halt minority land loss and rebuild the minority agricultural land base in every region of the United States and seeks to eradicate discrimination and indifference to minority farmers from all Department of Agriculture programs. More than 50 minority farmers from the Federation of Southern Cooperatives/Land Assitance Fund, the Arkansas Land and Farm Development Program, the Rural Advancement Fund and the Land Loss Prevention Project lobbied their members of Congress in Washington. Interfaith Action for Economic Justice, the National Family Farm Coalition and more than 80 other organizations demonstrated their support. (Big Win, p.1)

Gender roles

Definition: Socially expected behavior patterns or functions attributed to males or females in a particular society.

Relationship to Sustainable Development: Societies ascribe different roles and functions to men and women. Sustainable development requires a sensitivity to traditional gender roles, to role changes taking place within societies, and to the involvement of both men and women in development strategies.

Example: "Women farmers, though they play a critical role in food production, are often ignored by programmes meant to improve production. In Latin America, the Caribbean, and Asia they form a large agricultural labour force, while most of sub-Saharan Africa's food is grown by women. Yet almost all agricultural programmes tend to neglect the special needs of women farmers." (OCF pp. 124-5)

Aesthetics/arts

Definition: the expression of human creativity.

Relationship to Sustainable Development: Through aesthetic expression and the arts, people reveal the values that affect their lives.

These creations reveal their particular worldview, and their aspirations and goals as they strive for sustainable development.

Example: "The Gambia—A programme of drama performances has been initiated in Banjul and the provinces in order to reinforce efforts in the child survival campaign. The objective of the drama series, supported by UNICEF in collaboration with the national Medical and Health Department, is to stimulate social mobilization and spread health messages at the grass-roots level. Activities centred on promoting immunization, oral rehydration therapy (ORT) and regular attendance at post-natal and pre-natal clinics. All performances have been well attended." (African Kora p.8)

Political Elements

Power

Definition: the ability to act; the ability to influence and control individuals or groups.

Relationship to Sustainable Development: Sustainable development depends upon sharing power in society.

Example: The apartheid system of South Africa has systematically excluded Black South Africans from access to the society's institutions of political and economic power. Their human rights have been blatantly violated and injustices abound. For example, 14% of South Africa's land has been allocated to the Black majority which makes up approximately 72% of the population. Consequently, the existing government in South Africa is being pressured by the anti-apartheid struggle within South Africa and internationally to dismantle the structures of apartheid and share power with all persons and groups within that country.

Governmental system

Definition: The organization through which a political unit exercises authority and performs functions according to the distribution of power within it.

Relationship to Sustainable Development: In order to achieve sustainable development, governmental systems must reflect the views of a wide constituency in the society and include protection of the biosphere in policy decisions.

Example: In Argentina, rules for selecting a president agreed upon by a wide constituency of the society are lacking. Force is often more important than law or tradition, and wealthy agricultural and industrial elites often influence the choice of president. As a consequence of this inequity, only one elected government has served out its term in Argentina in over 40 years.

Security

Definition: Freedom from want, danger, fear, anxiety.

Relationship to Sustainable Development: "The whole notion of security as traditionally understood—in terms of political and military threats to national sovereignty—must be expanded to include the growing impacts of environmental stress—locally, nationally, regionally, and globally. There are no military solutions to 'environmental insecurity.' " (OCF p.19)

Example: "The world spent well over $900 billion on military purposes in 1985, more than $2.5 billion a day. The real cost is what the same resources might otherwise be used for:

- An Action Plan for Tropical Forests would cost $1.3 billion a year over the course of five years. This annual sum is the equivalent of half a day of military expenditure worldwide.
- Implementing the UN Action Plan for Desertification would cost $4.5 billion a year during the last two decades of this century—the equivalent of less than two days of military spending.
- ...The UN Water and Sanitation Decade...would have cost $30 billion a year during the 1980s. This is the approximate equivalent of 10 days of military spending.
- To supply contraceptive materials to all women already motivated to use family planning would cost an additional $1 billion per year on top of the $2 billion spent today. This additional $1 billion is the equivalent of 10 hours of military spending." (OCF p. 303)

Conflict and resolution

Definition:

- Conflict results from differences that emerge between two or more parties over a common issue or concern.
- Conflict resolution—agreed-upon actions that lead to the end of conflict.

Relationship to Sustainable Development: Movement toward sustainable development may cause conflicts which will require resolutions within a society or among countries.

Example: "As one chapter of our international fisheries relations has come to a close, other international areas are requiring more of our attention....The first area involves the question of how to deal with fishery stocks which are partly in the U.S. zone and partly in either the zones of neighboring countries or in the high seas areas beyond the 200-mile jurisdiction of any nation. For example, one of the main issues we face in the North Pacific is the dramatically increased level of fishing by third countries in the Bering Sea beyond 200 miles, the so-called donut area. In this region, fishing vessels from Japan, Korea, Poland, and China have concentrated their efforts and increased harvests of pollock from some 100,000 MT [metric tons] in 1984 to about 1.3 million MT in 1988. This is totally unacceptable. According to our scientists this dramatic increase in fishing is adversely affecting economically vital U.S. pollock stocks as well as other stocks in the

Bering Sea. We are currently working with the Soviet Union, the other Bering Sea coastal state, to develop measures for addressing the unregulated fisheries in the donut area. In these talks, the United States has proposed calling for a temporary moratorium on fishing in the donut by all countries, including the United States, until an adequate multilateral conservation regime for the region can be established." Edward E. Wolfe, Deputy Assistant Secretary for Oceans and Intrnational Environmental and Scientific Affairs (Current Policy p.2)

Economic Elements

Systems of trade and exchange

Definition: methods of exchanging goods and services within a society and with other societies.

Relationship to Sustainable Development: Sustainable development depends on ecologically safe and equitable systems of trade and exchange on national and international levels.

Example: "Two conditions must be satisfied before international economic exchanges can become beneficial for all involved. The sustainability of ecosystems on which the global economy depends must be guaranteed. And the economic partners must be satisfied that the basis of exchange is equitable; relationships that are unequal and based on dominance of one kind or another are not a sound and durable basis for interdependence. For many developing countries, neither condition is met." (OCF p.67)

Producing and manufacturing

Definition: the creation of goods such as capital resources and consumer goods.

Relationship to Sustainable Development: "Many essential human needs can be met only through goods and services provided by industry, and the shift to sustainable development must be powered by a continuing flow of wealth from industry." (OCF p.16)

Example: "If industrial development is to be sustainable over the long term, it will have to change radically in terms of the quality of that development, particularly in industrialized countries....In general, industries and industrial operations should be encouraged that are more efficient in terms of resource use, that generate less pollution and waste, that are based on the use of renewable rather than nonrenewable resources, and that minimize irreversible adverse impacts on human health and the environment." (OCF p.213)

Property

Definition: the land, resources, wealth, means of production, goods and services owned by individuals or groups.

Relationship to Sustainable Development: Inequities in access to property can undermine productivity and long-term sustainability.

Example: "In many countries where land is very unequally distributed land reform is a basic requirement. Without it, institutional and policy changes meant to protect the resource base can actually promote inequalities by shutting the poor off from resources and by favouring those with large farms, who are better able to obtain the limited credit and services available....In many countries women do not have direct land rights; titles go to men only. In the interests of food security, land reforms should recognize women's role in growing food. Women, especially those heading households, should be given direct land rights." (OCF p. 141)

Division of labor

Definition: a specific task assigned to each worker in agricultural or industrial production which enables a given item to be produced more efficiently and at a lower cost.

Relationship to Sustainable Development: The division of labor has led to lower costs, partly because broader environmental costs have not been factored into pricing. Products have become more affordable for more potential consumers. Serious problems, however, have also resulted from means of production based on the division of labor. Among them are social stratification, abuse of and undercompensation for workers—including children, alienation from meaningful work, tremendous waste in consumer societies, and environmental degradation. Sustainable development depends on increased productivity for meeting human needs, which can result from the division of labor, on equitable compensation for workers, and on an ecological ethic regarding the impact of the means of production on the environment.

Example: Specialization of labor was a major factor contributing to the material successes of the Industrial Revolution in Europe. As a result, people's life styles and quality of life changed dramatically—positively as well as negatively—as their lives were reorganized according to the needs of the factory system, as products of the Industrial Revolution became more available, and as the environmental impacts became apparent.

Physical quality of life/physical quality of life index

Definition: A composite measure of human wellbeing based on social indicators, viz., life expectancy, infant mortality rate, and literacy rate. The Physical Quality of Life Index (PQLI) was developed by the Overseas Development Council.

Relationship to Sustainable Development: Sustainable Development requires that the Physical Quality of Life be high enough

to guarantee a reasonable existence for the people. The Physical Quality of Life can be described subjectively through descriptions of living conditions or objectively through the analysis of statistics. The three indices of the PQLI—life expectancy, infant mortality rate, and literacy rate—are each based on a scale of 1 to 100. The PQLI is an average of these three with 100 at the top and 1 at the bottom. Since this composite index, calculated by averaging the above three indices, is free from the distortions of monetary measurements, such as GNP, it may be a more accurate measure of the relative relationships of nations. It also avoids the problems of absolute standards, e.g., calorie intake, for which there may not be agreement. Because it is concerned with basic and universal human needs, the PQLI may be applied to all nations with equal validity.

Example: There tends to be a correlation between the PQLI and GNP per capita, but there are significant divergences. The oil rich Arab states have high per capita GNPs but low PQLIs, while the island of Sri Lanka with a low per capita GNP has a very high PQLI. Australia, France and Iceland with PQLIs of 100 are ranked 1, 2 and 3. The United States is 15th with a 98, while Ethiopia with a PQLI of 25 is ranked 169.

Transportation systems

Definition: methods used to move goods, services, resources, and people, taking into account the extent of the area covered as well as the speed and cost of transportation.

Relationship to Sustainable Development: Efficient transportation systems foster economic opportunities for some individuals and societies. However, these systems may put greater strain on the environment.

Example: In the 1950s the Brazilian government developed plans for a system of highways crisscrossing the Amazon Jungle. After three decades, these roads have encouraged exploration, mining and logging. One consequence of the resultant large scale development projects has been the threatened extinction of thousands of species of plant and animal life, many of which species have not even been identified by scientists yet. (Brazil, p.19)

Tools/technology/ research

Definition:

- Tools - methods for increasing productivity and efficiency.
- Technology - the sum of knowledge of the means and methods of producing goods and services.
- Research and development - the basic applied research directed to the discovery, invention, and design of new products and processes.

Relationship to Sustainable Development: "Technology will continue to change the social, cultural, and economic fabric of nations and the world community. With careful management, new and emerging technologies offer enormous opportunities for raising productivity and living standards, for improving health, and for

conserving the natural resource base. Many will also bring new hazards, requiring an improved capacity for risk assessment and risk management." (OCF p. 217)

Example: "Biotechnology will have major implications for the environment. The products of genetic engineering could dramatically improve human and animal health. Researchers are finding new drugs, new therapies, and new ways of controlling disease vectors. Energy derived from plants could increasingly substitute for nonrenewable fossil fuels. New high-yield crop varieties and those resistant to unfavourable weather conditions and pests could revolutionize agriculture. Integrated pest management will become more common. Biotechnology could also yield cleaner and more efficient alternatives to many wasteful processes and polluting products. New techniques to treat solid and liquid wastes could help solve the pressing problem of hazardous waste disposal." (OCF pp. 217-8)

Population

Definition: the people of a specific society.

Relationship to Sustainable Development: Sustainable development envisions balance between the size and growth rate of the population and the distribution and use of resources.

Example: "Population growth and development are linked in complex ways. Economic development generates resources that can be used to improve education and health. These improvements, along with associated social changes, reduce both fertility and mortality rates. On the other hand, high rates of population growth that eat into surpluses available for economic and social development can hinder improvements in education and health....in the absence of deliberate measures, the imbalance between population growth and resource development will worsen." (OCF pp. 96, 97)

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